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WOOD FURNITURE MANUFACTURING OPERATIONS NESHAP IMPLEMENTATION DOCUMENT

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WOOD FURNITURE MANUFACTURING OPERATIONS
NESHAP IMPLEMENTATION DOCUMENT

Prepared for:

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TABLE OF CONTENTS

Page

CHAPTER 1

INTRODUCTION	1-1
1.1 BACKGROUND	1-1
1.2 PURPOSE OF GUIDEBOOK	1-1
1.3 ORGANIZATION	1-2

CHAPTER 2

OVERVIEW OF THE NESHAP	2-1
2.1 WOOD FURNITURE NESHAP - APPLICABILITY AND REQUIREMENTS .	2-1

CHAPTER 3

WORK PRACTICE STANDARDS	3-1
3.1 APPLICATION EQUIPMENT REQUIREMENTS	3.1
3.2 OPERATOR TRAINING PROGRAM	3.3
3.3 INSPECTION AND MAINTENANCE PLAN	3.3
3.4 CLEANING AND WASHOFF SOLVENT ACCOUNTING PROGRAM	3.4
3.5 ADDITIONAL WORK PRACTICE STANDARDS	3.4
3.6 WORK PRACTICE IMPLEMENTATION PLAN	3.5
3.7 FORMULATION ASSESMENT PLAN FOR FINISHING OPERATIONS	3.5
3.8 COMPOSITION OF CLEANING AND WASHOFF SOLVENTS	3.7

CHAPTER 4

NESHAP COMPLIANCE OPTIONS	4-1
4.1 NESHAP COMPLIANCE OPTIONS	4-1
4.2 COMPLIANCE OPTIONS FOR GLUING OPERATIONS	4-8

CHAPTER 5

RECORDKEEPING AND REPORTING REQUIREMENTS	5-1
5.1 RECORDKEEPING REQUIREMENTS	5-1
5.2 NESHAP REPORTING REQUIREMENTS	5.4

CHAPTER 6

EXAMPLE INSPECTION CHECKLISTS

TABLE OF CONTENTS (continued)

Page

CHAPTER 7

QUESTIONS ON THE WOOD FURNITURE NESHAP	7-1
7.1 APPLICABILITY	7-1
7.2 DETERMINING MAJOR SOURCE STATUS	7-3
7.3 DEFINITIONS	7-4
7.4 COATING EMISSION LIMITS AND COMPLIANCE OPTIONS	7-6
7.5 ADHESIVE EMISSION LIMITS AND COMPLIANCE OPTIONS	7-9
7.6 WORK PRACTICE STANDARDS	7-9
 APPENDIX A.	ACRONYMS AND DEFINITIONS
APPENDIX B.	LIST OF CONTACTS
APPENDIX C.	DETAILED TABLE OF CONTENTS FOR THE NESHAP
APPENDIX D.	FEDERAL REGISTER NOTICE--WOOD FURNITURE NESHAP
APPENDIX E.	LIST OF VOLATILE HAZARDOUS AIR POLLUTANTS
APPENDIX F.	POLLUTANTS EXCLUDED FROM USE IN CLEANING AND WASHOFF SOLVENTS
APPENDIX G.	SOURCES OF TECHNICAL AND REGULATORY INFORMATION

LIST OF FIGURES

	<u>Page</u>
Figure 2-1. Determining the applicability of the NESHAP to a facility	2-3

LIST OF TABLES

	<u>Page</u>
TABLE 2-1. COMPLIANCE DATES FOR THE NESHAP	2-5
TABLE 2-2. SUMMARY OF NESHAP EMISSION LIMITS	2-6
TABLE 3-1. WORK PRACTICE STANDARDS FOR THE WOOD FURNITURE NESHAP	3-2
TABLE 3-2. VHAP OF POTENTIAL CONCERN IDENTIFIED BY INDUSTRY ..	3-5
TABLE 4-1. COMPLIANCE METHODS FOR THE NESHAP	4-1
TABLE 4-2. COATING PARAMETERS FOR FACILITY USING AVERAGING APPROACH TO MEET THE NESHAP EMISSION LIMITS FOR FINISHING	4-6
TABLE 4-3. OPERATING PARAMETERS FOR ADD-ON CONTROL DEVICES	4-7
TABLE 4-4. COMPLIANCE DEMONSTRATION FOR COMPLIANT ADHESIVES	4-9
TABLE 5-1. RECORDKEEPING REQUIREMENTS FOR THE NESHAP	5-2
TABLE 5-2. RECORDKEEPING REQUIREMENTS NESHAP WORK PRACTICE STANDARDS	5-3
TABLE 5-3. INFORMATION TO BE INCLUDED IN INITIAL COMPLIANCE REPORT FOR THE NESHAP	5-5
TABLE 5-4. INFORMATION TO BE INCLUDED IN THE SEMIANNUAL COMPLIANCE STATUS REPORT FOR THE NESHAP	5-6

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The Clean Air Act as amended in 1990 (CAA) directs the U. S. Environmental Protection Agency (EPA) to regulate emissions of 189 toxic chemicals (hazardous air pollutants, or HAP) from a wide range of industrial sources. In 1992, surface coating of wood furniture was listed as a source category to be regulated under the CAA because many of the coatings, adhesives, and solvents used in the wood furniture industry contain toxic chemicals such as toluene, xylene, methanol, methyl ethyl ketone, glycol ethers, and formaldehyde. Therefore, the EPA is regulating HAP emissions from wood furniture manufacturing facilities to meet the requirements of the CAA. The EPA estimates that this regulation will reduce nationwide HAP emissions from wood furniture manufacturing facilities by 32,000 tons per year.

In December of 1995, the EPA issued national emission standards for hazardous air pollutants (NESHAP) to control emissions from wood furniture manufacturing operations. The regulation appeared in the December 7, 1995 edition of the Federal Register [60 FR 62930,] and was amended in June of 1997 [62 FR 30257; 62 FR 31361]. The level of emissions control required by the NESHAP is based on the maximum achievable control technology (MACT). Therefore, these standards are sometimes referred to as MACT standards.

The NESHAP was developed through a regulatory negotiation process. In a regulatory negotiation, EPA works with members of industry, State representatives, and representatives from environmental groups to try to reach an agreement regarding the level of control that should be required, the format of the standards, compliance options, and recordkeeping and reporting requirements. The wood furniture regulatory negotiation Committee reached consensus on all issues.

1.2 PURPOSE OF GUIDEBOOK

The purpose of this guidebook is to provide assistance to State and local agencies who are responsible for implementing the requirements of the wood furniture NESHAP. This guidebook is not a complete and full statement of the legal and technical requirements of the regulation. See

the Federal Register notice (Appendix D of this guidebook) for the complete text of the regulation.

This manual also includes summary tables and example calculations that are designed to assist in implementing the wood furniture NESHAP.

1.3 ORGANIZATION

Chapter 2 of this guidebook presents an overview of the NESHAP applicability and requirements. Chapters 3, 4, and 5 discuss the work practice standards, compliance options, and recordkeeping and reporting requirements, respectively. Chapter 6 presents example inspection checklists that State and local agency inspection personnel can use in making compliance inspections at wood furniture manufacturing facilities. Finally, Chapter 7 is a summary of commonly asked questions and answers on the wood furniture NESHAP. The appendices contain acronyms and definitions, contacts, other guidance materials available on the wood furniture NESHAP, a detailed table of contents for the NESHAP, and the text of the wood furniture manufacturing NESHAP.

CHAPTER 2

OVERVIEW OF THE NESHAP

2.1 WOOD FURNITURE NESHAP - APPLICABILITY AND REQUIREMENTS

The level of control required by the NESHAP is based on MACT. Unlike reasonably available control technology (RACT), which addresses VOC emissions, MACT is aimed at reducing emissions of hazardous air pollutants (HAP). While the majority of HAP are VOC, not all VOC are HAP. Appendix E contains a list of volatile HAP (VHAP) that will be regulated under this NESHAP.

In addition to regulating HAP emissions from finishing and cleaning operations, the NESHAP will also regulate emissions from some gluing operations. The NESHAP includes emission limitations for contact adhesives, and many of the work practice standards that are discussed in Chapter 3 also apply to gluing operations

2.1.1 Applicability of NESHAP

Figure 2-1 can be used to assist State and local agencies in determining whether a facility is subject to the NESHAP. The NESHAP is a national standard that applies to facilities that are engaged in, either in part or in whole, in the manufacture of wood furniture or wood furniture components and emit or have the potential to emit 10 tons or more of any HAP or 25 tons or more of any combination of HAP. These sources are known as major sources.

Wood furniture component means any part that is used in the manufacture of wood furniture. Examples include, but are not limited to, drawer sides, cabinet doors, and laminated tops. However, foam seat cushions manufactured and fabricated at a facility that does not engage in any other wood furniture or wood furniture component manufacturing operation are excluded from this definition. The NESHAP includes a list of SIC codes that should be used as a guide in determining the applicability of the NESHAP to a particular facility. However, if there is any question as to whether the NESHAP is applicable to a facility, Mr. Bob Marshall of EPA's Office of Enforcement and Compliance Assurance should be contacted.

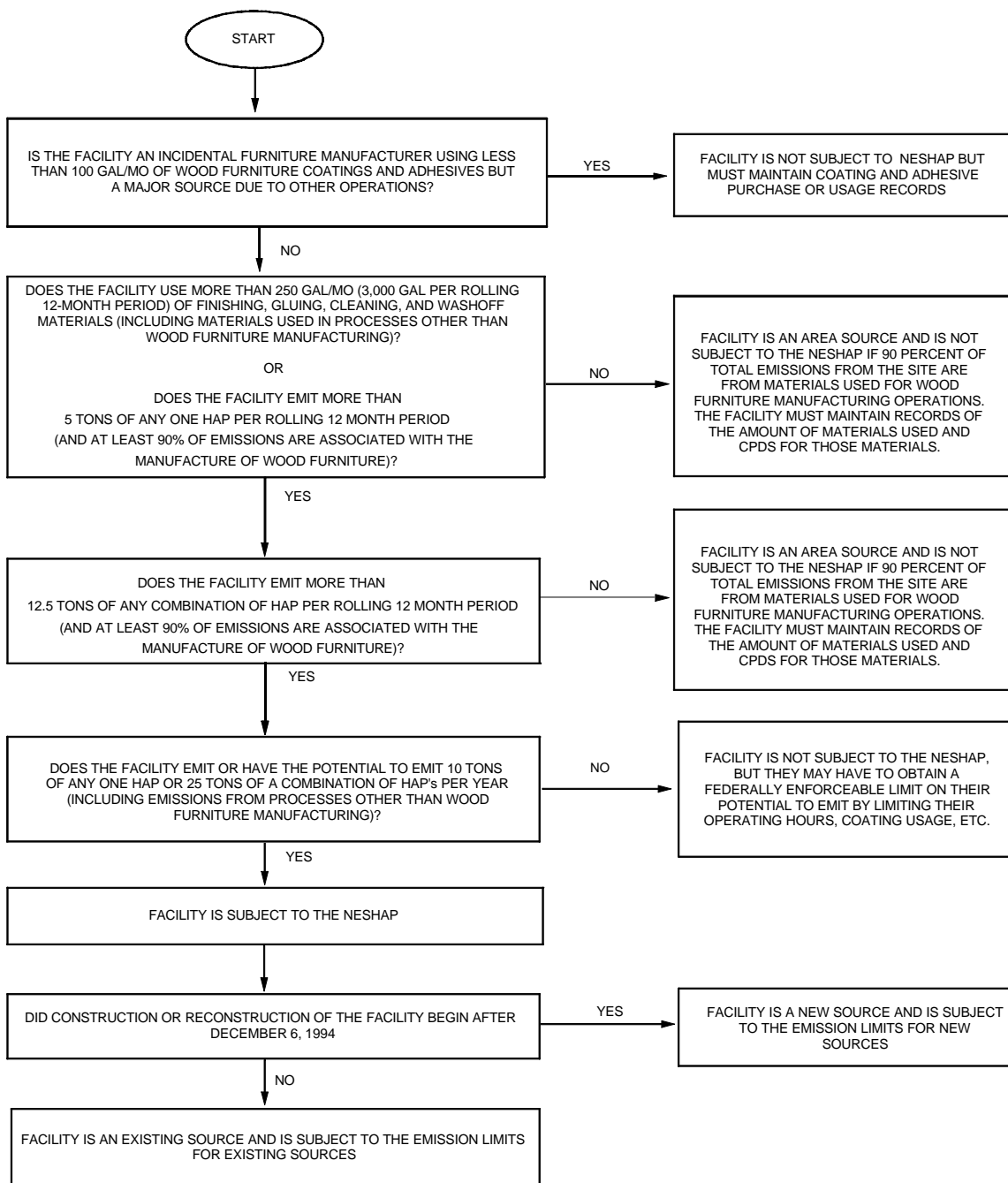


Figure 2-1. Determining the applicability of the NESHAP to a Wood Furniture facility.

In determining whether or not a source is major, HAP emissions from all sources at the facility must be accounted for. For example, a facility may manufacture metal and wood furniture. Although the NESHAP will only apply to the wood furniture manufacturing operations, emissions from the metal furniture manufacturing operations must be included when determining whether or not the source is major.

However, if a facility only performs incidental wood furniture manufacturing but is a major source due to other unrelated activities, the facility is not subject to the regulation if no more than 100 gallons per month of wood furniture coatings and adhesives are used. This exemption would include operations such as hobby shops on military bases or maintenance shops at chemical plants that manufacture wood furniture items such as bookshelves for on site use. These facilities must maintain records to demonstrate that their usage of wood furniture coatings and adhesives is no more than 100 gallons per month.

Sources using less than 250 gallons per month, or 3,000 gallons per rolling 12-month period, of coating, gluing, cleaning, and washoff materials, including materials used for operations other than wood furniture manufacturing, are area sources and are not subject to the NESHAP if the finishing materials, adhesives, cleaning solvents, and washoff solvents account for at least 90 percent of annual emissions at the plant site. These sources must also maintain records that demonstrate their material usage is below these levels. A rolling 12 month period includes the previous 12 months of operation at the facility. Facilities should note that this limitation includes all coating, gluing, cleaning, and washoff materials, whether those materials contain HAP or not.

Sources that emit no more than 5 tons per rolling 12 month period of any one HAP and no more than 12.5 tons per rolling 12 month period of any combination of HAP, and at least 90 percent of the plantwide emissions are associated with the manufacture of wood furniture or wood furniture components, are also considered area sources under the NESHAP. These facilities will be required to maintain records demonstrating that their actual emissions are less than these cutoffs.

2.1.2 Compliance Dates

Table 2-1 presents the compliance dates for existing facilities subject to the NESHAP. An existing facility's compliance date is determined by its actual emissions for the year 1996. New sources must comply with the provisions of the NESHAP upon promulgation of the NESHAP or

upon startup, or reconstruction, whichever is later. For this rule, facilities are considered new sources if construction commenced on or after December 6, 1994.

TABLE 2-1. COMPLIANCE DATES FOR THE NESHAP
FOR EXISTING SOURCES

1996 Emissions	Compliance date
>50 tons of HAP/yr	November 21, 1997
<50 tons of HAP/yr	December 7, 1998

2.1.3 NESHAP Emission Limitations

A summary of the NESHAP emission limitations is presented in Table 2-2. These include limitations on the VHAP content of both finishing materials and contact adhesives and a limit on the VOC content of strippable spray booth coating. Note that the NESHAP includes emission limitations for both existing and new sources. Wood furniture manufacturing facilities that begin construction or reconstruction after the proposal date, that is, after December 6, 1994, are considered new sources. Reconstruction is the replacement of components of a source to the extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source.

There are several options a facility may use to comply with the emission limits for finishing operations. Chapter 4 provides additional detail on each of the compliance methods, including examples of the calculations to be used to demonstrate compliance.

The standards for finishing operations limit the pounds of VHAP per pound of solids for selected coatings or as an average across all coatings used at the facility. Because many facilities formulate their washcoats, basecoats, and enamels onsite by thinning other types of finishing materials (for example, many facilities thin their sealers to use as washcoats) the regulation contains guidance that is aimed at reducing the recordkeeping burden on these facilities. If the facility does formulate one of these coatings onsite, the coating will be deemed compliant if the finishing material that is thinned is compliant and thinners with a HAP content of no more than 3.0 percent are used to thin the coating. For example, if a facility thins its sealer to make washcoat, the facility does not have to maintain records of the VHAP content of the washcoat as

TABLE 2-2. SUMMARY OF NESHAP EMISSION LIMITS

Emission point	Existing source ^a	New source ^a
<u>Finishing operations</u>		
(a) Achieve a weighted average VHAP content across all coatings (lb VHAP/lb solids, as applied);	1.0	0.8
(b) Use compliant finishing materials (lb VHAP/lb solids, as applied)		
-stains	1.0	1.0
-washcoats	1.0 ^b	0.8 ^b
-sealers	1.0	0.8
-topcoats	1.0	0.8
-basecoats	1.0 ^b	0.8 ^b
-enamels	1.0 ^b	0.8 ^b
-thinners (maximum %HAP allowable); or	10.0	10.0
(c) Use a control device or	1.0 ^c	0.8 ^c
(d) Use a combination of (a), (b), and (c)	1.0	0.8
<u>Cleaning operations</u>		
Strippable spray booth coating (lb VOC/lb solids, as applied)	0.8	0.8
<u>Gluing operations</u>		
(a) Use compliant contact adhesives (lb VHAP/lb solids, as applied) based on the following criteria:		
I. For aerosol adhesives, and for contact adhesives applied to nonporous substrates	NA ^d	NA ^d
ii. For foam adhesive used in products subject to flammability testing;	1.8	0.2
iii. For all other contact adhesives (including foam adhesives used in products not subject to flammability testing but excluding aerosol adhesives and excluding contact adhesives used on nonporous substrates); or	1.0	0.2
(b) Use a control device	1.0 ^e	0.2 ^e

^aThe limits refer to the maximum VHAP/VOC content, as applied.

^bWashcoats, basecoats, and enamels must comply with the limits presented in this table if they are purchased premade, that is, if they are not formulated onsite by thinning other finishing materials. If they are formulated onsite, they must be formulated using compliant finishing materials (i.e., those that meet the limits specified in this table) and thinners containing no more than 3.0 percent VHAP by weight.

^cThe control device must operate at an efficiency that is equivalent to no greater than 1.0 pound of VHAP (0.8 for new sources) being emitted per pound of solids used.

^dThere is no limit on the VHAP content of these adhesives.

^eThe control device must operate at an efficiency that is equivalent to no greater than 1.0 pound of VHAP (0.2 for new sources) being emitted per pound of solids used.

long as the sealer has a VHAP content of no more than 1.0 lb VHAP/lb solids (0.8 for new sources) and the thinner has a HAP content no greater than 3.0 percent by weight. If the facility purchases washcoat, however, it must demonstrate that the washcoat is compliant.

Contact adhesives are the only type of adhesive regulated by the standard. In the regulation, foam adhesives are considered a subset of contact adhesives, and they have a different emission limitation depending upon whether the product in which they are used is subject to flammability testing. Foam adhesives used in products subject to flammability testing, which is often required for office and institutional furniture, have a less stringent emission limit because testing has shown that products made with waterborne adhesives may not pass the flammability tests. However, foam adhesives used by new sources must meet the same emission limit as all other contact adhesives, regardless of any flammability testing that may be required. Note that aerosol adhesives and contact adhesives used on nonporous substrates (rubber, metal, rigid plastic, and flexible vinyl) are not subject to emission limits under this rule.

CHAPTER 3

WORK PRACTICE STANDARDS

Work practice standards are an integral part the NESHAP. In general, the work practice standards are aimed at reducing coating, cleaning solvent, and washoff solvent usage. Many facilities will have already implemented a number of these work practices because, in addition to reducing emissions, they also reduce worker exposure to solvents and, in many cases, operating costs.

A summary of the work practice standards that are required by the NESHAP is presented in Table 3-1. The work practice standards are discussed in detail in the following sections. Chapter 5 includes a discussion of recordkeeping and reporting requirements associated with the work practice standards.

3.1 APPLICATION EQUIPMENT REQUIREMENTS

The NESHAP limits the use of conventional air spray guns. Facilities are allowed to use these guns only under any of the following conditions:

1. If they are using the guns to apply coatings that have a VOC content no greater than 1.0 lb VOC/lb solids, as applied;
2. If they are using the gun for touchup and repair that occurs either after the completion of the finishing operation or after the application of stain and before the application of other types of finishing materials. In addition, any materials used for touchup and repair after the stain application must be applied from a container with a volume of no more than 2.0 gallons.
3. If the guns are automatic;
4. If the guns are used in a spray booth or other application station where emissions are directed to a control device;
5. If the guns are only used for applying small quantities of finishing material. The total amount of finishing material applied with the conventional air spray gun must be no more than 5.0 percent of the total amount of finishing material used in that semiannual period; or

**TABLE 3-1. WORK PRACTICE STANDARDS FOR THE WOOD
FURNITURE NESHAP^a**

Emission source	Work practice
Finishing operations	
Equipment leaks	Develop a written inspection and maintenance plan to address and prevent leaks. Inspections must be made once per month.
Storage containers, including mixing equipment	Keep containers used for storing or mixing HAP, or materials containing HAP, covered when not in use.
Application equipment	Discontinue use of conventional air spray guns. ^b
Cleaning and washoff operations	
Gun/line cleaning	<ul style="list-style-type: none"> - Collect solvent into a closed container. - Cover all containers associated with cleaning when not in use.
Spray booth cleaning	Use solvents for cleaning spray booths only under certain conditions. ^c
Washoff/general cleaning	<ul style="list-style-type: none"> - Keep washoff tank covered when not in use. - Minimize dripping by tilting and/or rotating the part to drain as much solvent as possible. Allow sufficient dry time for the part. - Maintain a log of the number of parts washed off and the reason for the washoff. - Maintain a log of the quantity and type of solvent used for washoff and cleaning, as well as the quantity of solvent reused for other operations at the facility and the quantity of solvent sent offsite for disposal.
Miscellaneous	
Operator training	All operators shall be given annual training on proper application methods, cleaning procedures, and equipment use.
Implementation plan	Develop a plan to implement these work practice standards and maintain onsite.

^aThe work practice standards apply to both existing and new major sources.

^bConventional air spray guns will be allowed only in any of the following instances:

- when they are used to apply finishing materials that emit less than 1.0 lb VOC/lb solids;
- touchup and repair under limited conditions;
- when spray is automated;
- when add-on controls are employed;
- if the cumulative application is no more than 5.0 percent of the total gallons of finishing material applied; or
- if the permitting agency determines that it is economically or technologically infeasible to use other application technologies.

^cSolvents can be used for cleaning conveyors and their enclosures and metal filters. Limited quantities, no more than 1.0 gallon, can also be used for spot cleaning when the spray booth coating is being replaced.

6. If the gun is used to apply stain and the facility can demonstrate that it is technically or economically infeasible to use another spray application technology.

To qualify for exemption (6), the facility must submit a videotape, a technical report, or some other type of documentation to the permitting agency that supports the facility's claim of technical or economic infeasibility. There are two factors that the facility can use either singly or in combination to support their claim. These are:

1. The production speed is too high or the part shape is too complex for one operator to finish the part and the spray booth is not large enough for an additional operator; or
2. The part has an excessively large vertical spray area, making it difficult to avoid sagging or runs in the stain.

A final determination of whether the facility may use the conventional air spray gun under exemption (6) will be made by the permitting authority.

3.2 OPERATOR TRAINING PROGRAM

Each facility subject to the NESHAP must conduct annual training of all employees who are involved in finishing, gluing, cleaning, or washoff operations. All personnel hired before the effective date of the standard, which will vary according to the size of the facility, must be trained within 6 months of the effective date. Personnel who are hired after the effective date of the standard must be trained upon hiring. All personnel must be retrained annually.

Operator training should include instruction in application techniques, cleaning and washoff procedures, equipment setup and adjustment, and management of waste solvent from cleaning and washoff operations. The facility must develop a training program that includes a list of current personnel that must be trained, an outline of the subjects covered in the initial and refresher training, and a description of how the facility will document that personnel have successfully completed the training program.

3.3 INSPECTION AND MAINTENANCE PLAN

Each facility must also develop an inspection and maintenance plan that addresses equipment leaks. Facilities are required to visually check all equipment used to transfer or apply finishing materials or organic solvents at least once a month to ensure there are no equipment leaks. The inspection and maintenance plan should include a schedule for inspections and a way to document the date of each inspection as well as any repairs that were made. After identifying

the leak, the facility must attempt to repair the leak within 5 days and make final repairs within 15 days, unless the leaking equipment has to be replaced, in which case the facility is allowed 3 months to complete repairs.

3.4 CLEANING AND WASHOFF SOLVENT ACCOUNTING PROGRAM

Facilities are required to develop a program for tracking the amount and type of organic solvent used for cleaning and washoff each month. They must also track the amount of spent solvent that is generated from each cleaning operation each month, the amount of spent solvent that is reused in-house for operations other than cleaning or washoff, and the amount that is sent offsite for disposal. Finally, the program should provide a mechanism for tracking the number of pieces that are washed off and the reason for the washoff.

3.5 ADDITIONAL WORK PRACTICE STANDARDS

3.5.1 Spray Booth Cleaning

The NESHAP limits the types of cleaners that can be used for spray booth cleaning. Unless operators are cleaning conveyors, continuous coaters and their enclosures, or metal filters, they may not use cleaning compounds containing more than 8.0 percent of VOC by weight. The 8.0 percent limit should still allow facilities to use many commercial cleaners, but it precludes the use of organic solvent. Facilities may, however, use organic solvents in small quantities, no more than 1.0 gallon per booth, if they are replacing the strippable spray booth coating or other protective material used to cover the booth.

3.5.2 Storage Containers

All containers that are used to store finishing, cleaning, gluing, or washoff materials must be closed unless an operator is emptying or filling the container. This includes drums that are used to hold wiping rags.

3.5.3 Gun and Line Cleaning

Organic solvent used to clean spray guns and lines must be collected in a container that is kept closed except when an operator is emptying or filling the container.

3.5.4 Washoff Operations

Tanks used for washoff must be kept closed when they are not being used. Operators should also try to minimize dripping from the part that has been washed off by tilting or rotating the part so that the solvent can drain back into the tank.

3.6 WORK PRACTICE IMPLEMENTATION PLAN

Each facility must develop a work practice implementation plan that documents how they will ensure that all of the work practice standards are being followed. The operator training program, the inspection and maintenance plan, and the solvent accounting program should be included in the work practice implementation plan along with examples of record forms or checklists developed by the facility as a part of these plans.

3.7 FORMULATION ASSESSMENT PLAN FOR FINISHING OPERATIONS

Table 3-2 presents a partial list of VHAP of potential concern. These VHAP of potential concern were identified by several coating suppliers as being present in some coating formulations used by the wood furniture industry. The first step for the facility in developing their formulation assessment plan is to identify any chemicals from this list that are used in their finishing materials or thinners. The facility must then determine how much of the chemical they used in 1994, 1995, and 1996. The highest value from those 3 years is considered the baseline level of usage for that chemical. Note that VHAP of potential concern used in adhesives should not be included in the baseline level. The formulation assessment plan only applies to VHAP of potential concern used in finishing materials.

TABLE 3-2. VHAP OF POTENTIAL CONCERN IDENTIFIED BY INDUSTRY

Chemical	CAS No.	EPA de minimis, tons/yr
Dimethyl formamide	68122	1.0
Formaldehyde	50000	0.2
Methylene chloride	75092	4.0
2-Nitropropane	79469	1.0
Isophorone	78591	0.7
Styrene monomer	100425	1.0
Phenol	108952	0.1
Diethanolamine	11422	5.0
2-Methoxyethanol	109864	10.0
2-Ethoxyethyl acetate	111159	5.0

Sources using a control device to reduce emissions should adjust their usage based on the overall control efficiency of the control system. Because some portion of the formaldehyde and

styrene in a coating becomes part of the cured resin, the regulation provides guidance on how to calculate usage of these chemicals. For formaldehyde, usage is based on the amount of free formaldehyde present in the finishing material when it is applied. For styrene monomer, usage is calculated by multiplying the amount of styrene monomer in the finishing material when it is applied by a factor of 0.16.

Facilities must continue to track their usage of each VHAP of potential concern. However, they only have to track usage of those VHAP that are present in a finishing material in a large enough quantity that it must be reported on the material safety data sheet (MSDS). If, after November 1998, a facility's usage of the VHAP exceeds the baseline usage level for that VHAP, the facility must notify the permitting authority in writing that they have exceeded their baseline level, the amount by which they have exceeded the baseline, and the reasons why. If the facility has exceeded the baseline for any of the reasons cited below, and they are in compliance with any State regulations or requirements for that VHAP, the facility does not have to take any further action. They may also exceed the baseline level for any of the following reasons:

1. The exceedance is no more than 15.0 percent above the baseline level;
2. The facility's usage of the VHAP is less than the de minimis value for that VHAP as presented in Table 3-2;
3. The facility is in compliance with its State's air toxics regulations or guidelines for that VHAP; or
4. The VHAP is being used in a finishing material with a VOC content of no more than 1.0 lb VOC/lb solids, as applied.

If the increase above the baseline level is due to some reason other than those listed above, the facility must then refer to their permitting authority to discuss the reason for the increase and whether or not there are practical and reasonable technology-based solutions for reducing the usage. Cost, quality, and marketability of the product, as well as successful usage of the technology by other wood furniture manufacturers, may all be considered in determining whether a solution exists. The facility and the permitting authority may also agree upon other factors that should be used for such an evaluation. If there are no practical and reasonable solutions, the facility would not have to take any further action. If there are solutions, the facility must develop a plan to reduce usage of the VHAP to the extent feasible. The plan should address the approach

the facility will use to reduce usage, a timetable for reducing usage, and a schedule for reporting progress to the permitting authority.

There may be cases in which a facility begins using a VHAP of potential concern for which a baseline level has not been previously established. In those cases, the baseline level is equal to the de minimis level, based on 70 year exposure levels and data provided in the proposed rulemaking pursuant to section 112(g) of the Clean Air Act, for that VHAP. A complete listing of all VHAP of potential concern is presented in Appendix A, Table A-1. If usage of the VHAP is greater than the de minimis level, then the facility must follow the same procedures as those in the previous paragraphs for exceeding an established baseline level. Any of the reasons listed in (1) through (4) will excuse the facility from further action.

3.8 COMPOSITION OF CLEANING AND WASHOFF SOLVENTS

The NESHAP also prohibits the use of solvents containing any of the chemicals listed in Appendix F for cleaning and washoff operations. However, the restriction is only limited to chemicals that are present in the solvent at a level high enough that they have to be reported on the MSDS.

CHAPTER 4

NESHAP COMPLIANCE OPTIONS

The NESHAP includes four options that a facility can use to comply with the regulations. Table 4-1 summarizes these options. Each of these options has advantages and disadvantages. In general, the more flexibility the option provides the facility, the greater the recordkeeping requirements associated with the option.

TABLE 4-1. COMPLIANCE METHODS FOR THE NESHAP

Compliance method	NESHAP
Compliant coatings	Yes
Averaging	Yes, finishing only
Add-on control device	Yes
Combination	Yes

In this chapter, we will discuss each of these options in more detail for the NESHAP and present example calculations that a facility can use to demonstrate they are complying with each option. A detailed discussion of the recordkeeping and reporting requirements associated with each option is presented in Chapter 5.

4.1 COMPLIANCE OPTIONS FOR FINISHING OPERATIONS

4.1.1 Compliant Coatings

Table 2-2 presents the NESHAP emission limits for coatings for both existing and new sources. As shown in the table, the standard limits the VHAP content of all stains, washcoats, sealers, topcoats, basecoats, enamels, and thinners used by a facility. There is no limit on the VHAP content of coatings typically used in smaller amounts, such as fillers and glazes. With the exception of the emission limit for stains, the emission limits for coatings used by new sources are more stringent than those used by existing sources.

To demonstrate compliance with the NESHAP emission limits for coatings, facilities have to maintain copies of certified product data sheets for each coating, and thinners added to those coatings, subject to an emission limit. If a facility thins the coatings before application, the

NESHAP does not require the facility to maintain data sheets showing the amount of thinner added to each batch and the VHAP content of that batch after thinning. However, the emission limits are on an as applied basis so facilities do need to make sure that they are not thinning the coating to the point that the emission limit is exceeded. If an inspector comes in and takes a sample of the coating and it exceeds the limit, the facility will be in violation of the standard even though the CPDS shows the VHAP content of the coating is no greater than the emission limit established for that coating and the thinner the facility used had a HAP content less than 10.0 percent by weight. Therefore, it is in the best interest of the facility to maintain data sheets for calculating the as-applied VHAP content even though it is not required by the NESHAP.

Setting up a system to determine the VHAP content of coatings as they are applied can be straightforward. Example 1 demonstrates how to calculate the VHAP content of a coating after thinning.

In summary, facilities using a compliant coatings approach to comply with the NESHAP limits for finishing operations are required to maintain certified product data sheets for each coating subject to an emission limit and any thinners that are added to those coatings.

4.1.1.1 Compliant coatings and continuous coaters. The NESHAP contains special compliance provisions for facilities that are using a compliant coatings approach to comply with the coating emission limits and are applying those coatings with a continuous coater. Facilities may choose between the following two options.

1. Option 1 for demonstrating compliance is basically the same as it is for coatings that are not applied with continuous coaters. Facilities must maintain copies of the CPDS for each coating subject to an emission limit, and, if the coating is subsequently thinned, they must maintain records that demonstrate the VHAP content of the as applied coating does not exceed the emission limit for that coating. If an inspector takes a sample of the coating in the reservoir and performs a Method 311 (40 CFR Part 60, Appendix A) analysis of the sample, the coating must have a VHAP content no greater than the emission limit for the coating.

2. Under option 2, the facility must monitor the viscosity of the coating in the reservoir. The viscosity of the initial coating in the reservoir must be measured. The facility may then either monitor the viscosity of the coating in the reservoir continuously with a viscosity meter, or they may measure the viscosity each time solvent is added. If, at any time, the viscosity of the

Example 1 - Calculating the As-Applied VHAP Content of a Coating

VHAP content of topcoat - 0.8 lb VHAP/lb solids, as supplied

Emission limit - 1.0 lb VHAP/lb solids, as applied

Coating density - 8.0 lb/gal

Coating solids content - 0.4 (40 percent)

Coating usage - 1,000 gal

Solids used = Density x Gals used x percent solids

$$= 8.0 \times 1,000 \times 0.4$$

$$= 3,200 \text{ lb solids}$$

VHAP from as-supplied coating

$$= 0.8 \text{ lb VHAP/lb solids} \times 3,200 \text{ lb solids}$$

$$= 2,560 \text{ lb VHAP}$$

Thinner VHAP content - 0.6 lb/gal

Thinner usage - 100 gal

VHAP from thinner

$$0.6 \times 100 = 60 \text{ lb VHAP}$$

VHAP from thinner and as supplied coating $2,560 + 60 = 2,620 \text{ lb}$

Solids from as-supplied coating (also equal to solids of as-applied coating because thinner contains no solids) = 3,200 lb

$$\text{VHAP content of as applied coating} = 2,620 \text{ lb VHAP} / 3,200 \text{ lb solids} = 0.82 \text{ lb}$$

VHAP/lb solids, as applied.

In this case, the as-applied coating is still compliant, that is, it has a VHAP content no greater than 1.0 lb VHAP/lb solids, as applied. However, if this facility were a new source, it would not be in compliance.

coating in the reservoir is less than the viscosity of the initial coating, the facility is out of compliance. The facility must also maintain a record of all solvent and coating additions to the reservoir. As with option 1, if an inspector takes a sample of the coating in the reservoir, the VHAP content must not exceed the emission limit for that coating. However, the VHAP content as calculated from the facility's records may exceed the emission limit.

4.1.2 Averaging

The NESHAP also provides facilities the option of averaging their coatings to meet the standard. The NESHAP gives facilities the flexibility of meeting a monthly average. For existing sources, the average VHAP content for all finishing materials used at the facility during the month must be no greater than 1.0 lb VHAP/lb solids, as applied. For new sources, the limit is 0.8 lb VHAP/lb solids, as applied. Note that although the compliant coatings approach only requires specific coatings to meet the emission limits, all coatings used at the facility during the month must be included in the averaging equation for the NESHAP.

Both existing and new sources must use the following equation to demonstrate compliance when using an averaging approach:

$$E = (M_{c1}C_{c1} + M_{c2}C_{c2} + \dots + M_{cn}C_{cn} + S_1W_1 + S_2W_2 + \dots + S_nW_n) / (M_{c1} + M_{c2} + \dots + M_{cn})$$

Equation (3)

where:

- E = average VHAP content of finishing materials (lb VHAP/lb solids);
- M_{cn} = the mass of solids in finishing material (c) used monthly (lb solids/month);
- C_{cn} = the VHAP content of finishing material (c) in lb VHAP/lb solids;
- S_n = the VHAP content, expressed as a weight fraction, of any thinners added to the finishing materials participating in the averaging equation; and
- W_n = the amount of S_n , in pounds, added to the finishing materials during the monthly averaging period.

For existing sources, E must be no greater than 1.0 lb VHAP/lb solids. For new sources, E must be no greater than 0.8.

To demonstrate compliance using an averaging approach, a facility must:

1. Maintain certified product data sheets for each finishing material;
2. Maintain records of the amount of each finishing material used each month and the percent solids of that finishing material in order to determine the pounds of solids of each finishing material used;
3. Maintain certified product data sheets for all thinners added to the finishing materials used each month; and
4. Maintain records of the amount of thinners, in pounds, added to the finishing materials during the month.

Example 2 illustrates a facility that has chosen to use an averaging approach to meet the NESHAP emission limits for finishing operations.

4.1.3 Add-On Controls

Facilities may also use an add-on control device to meet the NESHAP emission limits for finishing operations. It is anticipated that only a few facilities will choose this option, but it is available. Currently, add-on control devices are being used by only a few facilities, and those are primarily large kitchen cabinet and business furniture manufacturers with automated flatline finishing systems. Controlling traditional wood furniture manufacturing exhaust streams, which are typically high volume, low concentration streams, with add-on control devices is technically feasible but generally not cost effective.

The NESHAP also recognizes that the overall control efficiency of a control system is a product of the destruction/removal efficiency of the control device and the capture efficiency. The capture efficiency is the ratio of the quantity of pollutants entering the control device to the quantity of pollutants emitted from the emission source. The NESHAP identifies the methods to be used to determine the capture efficiency initially. Because these methods are somewhat complicated and apply to only a few facilities, they will not be discussed in detail here.

Facilities using add-on control devices must conduct a performance test to demonstrate the overall control efficiency of the system. During the performance test, they need to establish operating parameter(s) they can monitor that will demonstrate that the control device is continually achieving the required control efficiency. If they cannot establish an operating parameter, they may have to continually monitor HAP emissions at the inlet and outlet of the

Example 2 - Calculations to Demonstrate Compliance for a Facility Using an Averaging Approach to Meet the NESHAP Emission Limits

Facility Description - The facility is a medium sized kitchen cabinet plant using about 60,000 gallons of coating per year, with a basic finishing sequence of stain, sealer, and topcoat. The facility is an existing source, so they must achieve an average emission limit of no more than 1.0 lb VHAP/lb solids, as applied. In order to meet the NESHAP emission limits, they have decided to use sealers and topcoats with slightly higher solids contents, that is, about 35 percent. They have also worked with their coating supplier to try and lower the HAP content of these coatings by using non-HAP solvents. The facility has had little success reformulating their stains, however, so they must use an averaging approach to meet the standard. The facility also uses small amounts of thinner, typically lacquer thinner, for their sealers and topcoats. Table 4-2 presents the coating usage and parameters for the facility.

TABLE 4-2. COATING PARAMETERS FOR FACILITY USING AVERAGING APPROACH TO MEET THE NESHAP EMISSION LIMITS FOR FINISHING

Parameters	Stain	Sealer	Topcoat	Thinner
Usage (gal/month)	925	2,000	2,075	60
Density (lb/gal)	6.7	7.8	7.9	6.8
% Solids (by weight)	1.5	35	35	0
Usage (lb solids/month)	93	5,460	5,737	0
VHAP content (lb/gal)	0.1	2.0	1.5	3.4
VHAP content (lb VHAP/lb solids)	45	0.7	0.5	N/A

Using Table 4-2:

$$E = ((93)(45) + (5,460)(0.7) + (5,737)(0.5) + (60)(6.8)(0.5)) / (93 + 5,460 + 5,737) = 0.98 \text{ lb VHAP/lb solids}$$

Because E is less than 1.0 the facility is in compliance.

control device. Table 4-3 presents operating parameters to be monitored for facilities using thermal oxidizers, catalytic oxidizers, and carbon adsorbers. To demonstrate continuous compliance with the standard using a control device, the facility must continuously monitor the operating parameter(s) to demonstrate that the operating parameter(s) are in the range established during the initial performance test.

TABLE 4-3. OPERATING PARAMETERS FOR ADD-ON CONTROL DEVICES

Control device	Operating parameter(s)
Thermal oxidizer	Minimum combustion temperature
Catalytic oxidizer with fixed catalyst bed	Minimum gas temperature upstream and downstream of the catalyst bed
Catalytic oxidizer with fluidized catalyst bed	1. Minimum gas temperature upstream of the catalyst bed; and 2. Pressure drop across the catalyst bed.
Carbon adsorber	1. Total regeneration mass stream for each regeneration cycle; and 2. Carbon bed temperature after each regeneration.

4.1.4 Combination of Compliance Options

The NESHAP allows facilities to use any combination of the three options to meet the emission limits for finishing operations. If using a combination of options, the facility must meet the compliance demonstration requirements associated with each option.

4.2 COMPLIANCE OPTIONS FOR GLUING OPERATIONS

As discussed in Chapter 2, the NESHAP also establishes emission limits for contact adhesives. Facilities using contact adhesives have two options for demonstrating compliance--using compliant contact adhesives, that is, those that meet the emission limits presented in Table 2-2, or using an add-on control device.

4.2.1 Compliant Contact Adhesives

Table 2-4 presents the emission limits for contact adhesives for both existing and new sources. There are two categories of contact adhesives for the purposes of this rule: foam adhesives and all other contact adhesives (excluding aerosol adhesives and excluding contact adhesives used on nonporous substrates such as metal, rubber, rigid plastic, or flexible vinyl). For existing sources, the limit is less stringent for foam adhesives due to problems encountered in

formulating foam adhesives that pass flammability tests. The compliance demonstration requirements for facilities using compliant contact adhesives are the same as those for facilities using compliant coatings to meet the finishing limits.

If a facility does not thin their contact adhesives onsite, the only requirement for demonstrating compliance is to maintain a certified product data sheet for each contact adhesive. However, if the facility thins their adhesives onsite, they must also maintain data sheets that demonstrate the as-applied VHAP content of the contact adhesive does not exceed the allowable level. Because the limit for contact adhesives varies according to the use of the adhesive, the facility should also maintain a record of how the contact adhesive was used. Table 4-4 summarizes the compliance demonstration requirements for facilities using contact adhesives.

TABLE 4-4. COMPLIANCE DEMONSTRATION FOR COMPLIANT CONTACT ADHESIVES

Adhesive usage scenario	Compliance demonstration requirements
Contact adhesives are used as supplied, that is, no additives or thinners are added to the contact adhesive.	<ol style="list-style-type: none">1. Maintain copies of certified product data sheets; and2. Maintain record of operation for which contact adhesive was used.
Contact adhesives are thinned before application	<ol style="list-style-type: none">1. Maintain copies of certified product data sheets;2. Maintain data sheets showing contact adhesive and thinner usage and calculation of as-applied VHAP content; and3. Maintain record of operation for which adhesive was used.

4.2.2 Add-On Control Devices

The compliance demonstration requirements for facilities using an add-on control device to reduce emissions from the use of contact adhesives are the same as those discussed in 4.1.3.

CHAPTER 5

RECORDKEEPING AND REPORTING REQUIREMENTS

This section presents the recordkeeping and reporting requirements for facilities subject to the NESHAP. In general, these requirements will vary according to the method the facility chooses to use to demonstrate compliance.

5.1 RECORDKEEPING REQUIREMENTS

Because many facilities are expected to use a compliant coatings and/or contact adhesives approach to meet the requirements of the NESHAP, maintaining complete records is particularly important because they allow these facilities to demonstrate compliance. Therefore, many of the recordkeeping requirements discussed in this chapter were also discussed in Chapter 4. However, in addition to the recordkeeping requirements associated with the emission limits and compliance options presented in Chapters 2 and 4, this chapter will also discuss recordkeeping requirements associated with the work practice standards.

5.1.1 NESHAP Recordkeeping Requirements

The recordkeeping requirements for the NESHAP are dependent upon the option the facility is using to demonstrate compliance. Table 5-1 summarizes the recordkeeping requirements by compliance option for both finishing and gluing operations.

5.1.2 Recordkeeping Requirements for the NESHAP Work Practice Standards

EPA has included recordkeeping requirements to ensure facilities are implementing these standards, because the work practice standards are considered a critical element of the NESHAP. A summary of the recordkeeping requirements associated with the work practice standards is included in Table 5-2.

Facilities are also required to maintain a copy of the work practice implementation plan onsite. The work practice implementation plan should include a copy of the operator training program, the inspection and maintenance plan, the cleaning and washoff solvent accounting system, and the formulation assessment plan for finishing operations.

5.2 NESHAP REPORTING REQUIREMENTS

Each wood furniture manufacturing facility should have already submitted an initial notification report. Each facility must also submit an initial compliance status report and semiannual continuous compliance status reports. Table 5-3 summarizes the information that should be included in the initial compliance status report. The initial compliance status report must be submitted no later than 60 days after the compliance date.

The first semiannual compliance status report must be submitted no later than 30 calendar days after the end of the first 6-month period following the facility's compliance date. Subsequent reports must be submitted no later than 30 calendar days after the end of each 6-month period. Table 5-4 summarizes the information to be included in the semiannual compliance status reports for the NESHAP.

The semiannual continuous compliance status report must be signed by a responsible official of the company that owns or operates the facility.

TABLE 5-1. RECORDKEEPING REQUIREMENTS FOR THE NESHP

Compliance option	Recordkeeping requirements
Finishing operations	
Compliant coatings	Certified product data sheets for each coating and thinner subject to the emission limits presented in Chapter 2; and The VHAP content, in lb VHAP/lb solids, as applied, for each coating subject to the emission limits presented in Chapter 2.
Compliant coatings with continuous coaters	<u>Option 1</u> <ul style="list-style-type: none"> Same as requirements for compliant coatings. Records must demonstrate that the VHAP content does not exceed the applicable emission limit. <u>Option 2</u> <ol style="list-style-type: none"> Certified product data sheet for each coating and thinner; Record of all solvent and coating additions to the reservoir; and All viscosity measurements.
Averaging	<ol style="list-style-type: none"> Certified product data sheets for each coating participating in averaging; Records of the amount of coating and thinner used each month; Copies of the averaging calculation.
Add-on control device	<ol style="list-style-type: none"> Certified product data sheets for each coating; Copies of calculations demonstrating equivalency of using a control system; Records of the daily average value of each continuously monitored parameter; and For facilities using a fluidized bed catalytic incinerator, records of the pressure drop across the catalyst bed.
Compliant coatings and control device or averaging and control device	Maintain all records required by each individual option.
Gluing Operations	
Compliant contact adhesives	<ol style="list-style-type: none"> Certified product data sheet for each contact adhesive subject to the emission limits presented in Chapter 2; If adhesives are thinned, data sheets showing contact adhesive and thinner usage and calculation of the as applied VHAP content; and Records documenting the process in which the contact adhesive was used.
Add-on control device	<ol style="list-style-type: none"> Certified product data sheet for each contact adhesive subject to the emission limits presented in Chapter 2; Copies of calculations demonstrating the equivalency of using a control system; Records of the daily average value of each continuously monitored parameter; and For facilities using a fluidized bed catalytic incinerator, records of the pressure drop across the catalyst bed.

**TABLE 5-2 RECORDKEEPING REQUIREMENTS FOR THE NESHAP WORK
PRACTICE STANDARDS**

Work practice standard	Recordkeeping requirements
Operator training program	<ol style="list-style-type: none"> 1. Copy of program, including: <ul style="list-style-type: none"> - a list of personnel required to be trained; - an outline of the subjects to be covered; - lesson plans for training courses; 2. Records documenting successful completion of the training program for each individual; and 3. Date each individual was trained.
Inspection and maintenance plan	<ol style="list-style-type: none"> 1. Copies of checklists documenting visual monthly inspection of equipment; and 2. Records demonstrating timeframe for making repairs.
Cleaning and washoff solvent accounting system	<ol style="list-style-type: none"> 1. Record of the quantity and type of organic solvent used each month for washoff and cleaning; 2. Record of the number of pieces washed off and the reason why; and 3. Record of the quantity of spent solvent generated each month by operation and whether it is recycled onsite or disposed offsite.
Spray booth cleaning	VOC content of material used for cleaning spray booths.
Application equipment requirements	<p>Documentation that conventional air spray guns are only being used as allowed, including:</p> <ul style="list-style-type: none"> • if used for applying low VOC coatings, records showing that the VOC content is no greater than 1.0 lb VOC/lb solids; • if used for applying small quantities of finishing materials, other than for touchup and repair, records of total finishing materials usage and quantity applied with air spray gun.
Formulation assessment plan for finishing operations	<ol style="list-style-type: none"> 1. Maintain MSDS for coatings containing VHAP of potential concern; and 2. Maintain usage records for coatings containing VHAP of potential concern.
Limitation on chemical composition of cleaning/washoff solvents	Maintain MSDS for all solvents used for cleaning and/or washoff.

TABLE 5-3. INFORMATION TO BE INCLUDED IN INITIAL COMPLIANCE
REPORT FOR THE NESHP

Compliance method	Information to be included in report
Compliant coatings/contact adhesives	Statement that the facility is using compliant coatings, thinners, and/or contact adhesives.
Compliant coatings with continuous coaters	<ol style="list-style-type: none"> 1. Statement that the facility is using compliant coatings, as determined by the VHAP content of the coating in the reservoir and the VHAP content as calculated from records, and compliant thinners; or 2. Statement that the facility is using compliant coatings, as determined by the VHAP content of the coating in the reservoir, and compliant thinners and that they are monitoring the viscosity of the coating in the reservoir; and 3. Data demonstrating relationship between the viscosity of the coating in the reservoir and the VHAP content of the coating.
Averaging (coatings only)	Results of averaging calculation for the first month, starting the first day of the month following the compliance date.
Add-on control device	<ol style="list-style-type: none"> 1. Monitoring plan that identifies each operating parameter to be monitored for the capture device; and 2. Results from initial performance test.
Compliance with work practice standards	Statement that the facility has developed a work practice implementation plan and has established procedures for implementing the provisions of the plan.

TABLE 5-4. INFORMATION TO BE INCLUDED IN THE SEMIANNUAL COMPLIANCE STATUS REPORT FOR THE NESHAP

Compliance with emission limits for coatings/contact adhesives	Information to be included in report
Compliant coatings and/or contact adhesives	Statement that the facility has used compliant coatings, thinners, and/or contact adhesives each day during the reporting period. If noncompliant coatings, thinners, or contact adhesives have been used during the reporting period, the facility should identify when the coatings/thinners/adhesives were used and the reasons why.
Compliant coatings with continuous coaters	<ol style="list-style-type: none"> 1. Statement that the facility has used compliant coatings, as determined by the VHAP content of the coating in the reservoir and the VHAP content of the coating as calculated from records, and compliant thinners each day during the reporting period; or 2. Statement that the facility has used compliant coatings, as determined by the VHAP content of the coating in the reservoir, and compliant thinners each day in the reporting period and that the viscosity of the coating in the reservoir has not been less than the viscosity of the initial coating.
Averaging (coatings only)	Results of the averaging equation for each month within that semiannual period.
Add-on control device	Statement that the facility has not operated the capture or control device at a daily average value greater than or less than (as appropriate) each operating parameter value.
Compliance with work practice standards	Statement that the work practice implementation plan is being followed, or, if any provisions of the plan have not been followed during the reporting period, a description of the violation and the time period during which it occurred.

CHAPTER 6

EXAMPLE INSPECTION CHECKLISTS

This chapter contains example checklists that the state or local agency inspectors may use in determining a facility's compliance status. The checklists include a summary form for recording background information on the facility and its compliance status, a checklist for the work practice standards, and a checklist for recording the facility's recordkeeping practices.

NESHAP INSPECTION CHECKLIST

Applicable Rule: 40 CFR Part 63, Subpart JJ—National Emission Standards for Wood
Furniture Manufacturing Operations

Plant Name _____

Plant Address _____

City _____ State _____ Zip Code _____

Plant Contact/Title _____

Plant Phone number _____

Owner/Operator/Title _____

Street Address (if different than plant's) _____

City _____ Sate _____ Zip Code _____

Inspection Date: ____/____/____ Time: _____

Indicate whether a facility is a new or existing source:

☐ New source

☐ Existing source

Indicate the facility's compliance date: ____/____/____

Process Description: _____

IN COMPLIANCE: Y N

NOTICE TO CORRECT: _____

Source signature/Title: _____ Date: __/__/__

Investigator/Title: _____ Date: __/__/__

Indicate the facility's compliance approach:

- ☐ Compliant Coatings/ Adhesives _____
- ☐ Compliant Coatings with continuous coaters _____
- ☐ Averaging _____
- ☐ Control Device _____
- ☐ Combination of methods _____

Facility is in compliance with:

- ☐ Emission limitations (Emission Limitation Checklist and appropriate records are enclosed)
- ☐ Work Practice Standards (Work Practice Standards and appropriate records are enclosed)
- ☐ Recordkeeping (Recordkeeping Requirements Checklist and appropriate records are enclosed)

WORK PRACTICE STANDARDS CHECKLIST

Application Equipment Requirement

- ☐ The facility does not use conventional air spray guns.
- ☐ The facility operates conventional air spray guns, but are only used:
 1. If they are using the guns to apply coatings that have a VOC content no greater than 1.0 lb VOC/lb solids, as applied;
 2. If they are using the gun for touchup and repair that occurs either after the completion of the finishing operation or after the application of stain and before the application of other types of finishing materials. In addition, any materials used for touchup and repair after the stain application must be applied from a container with a volume of no more than 2.0 gallons.
 3. If the guns are automatic;
 4. If the guns are used in a spray booth or other application station where emission are directed to a control device;
 5. If the guns are only used for applying small quantities of finishing materials. The total amount of finishing material applied with the conventional air spray gun must be no more than 5.0 percent of the total amount of finishing material used in that semiannual period; or
 6. If the gun is used to apply stain and the facility has demonstrated that it is technically or economically infeasible to use another spray application technology.

Operator Training Program

- ☐ The facility has developed an operator training program that contains:
 - A list of job descriptions and current personnel that must be trained;
 - An outline of the subjects to be covered for each job description;
 - An initial and refresher training program; and
 - A description how the facility will document personnel's successful completion of the program.

Inspection and Maintenance Plan

- ☐ The facility has developed an inspection and maintenance plan that:
 - Addresses equipment leaks;
 - Includes a monthly visual inspection to ensure there are no equipment leaks of all equipment used to transfer or apply finishing materials or organic solvents;
 - Specifies how a facility will document date, result, and repairs of an inspection; and
 - Assures first attempt at leak repair within 5 days and final repair within 15 days, unless repair requires replacement of the equipment in which case the facility is allowed 3 months to complete repairs.

Cleaning and Washoff Solvent Accounting Program

- ☐ The facility has developed a program that tracks:
 - the amount of organic solvent used for cleaning and washoff each month;
 - the quantity of spent solvent generated from each cleaning or washoff operation each month;
 - the amount of spent solvent that is reused or disposed; and
 - the number of pieces washed off and the reason for the washoff.

Cleaning and Washoff Solvent Composition

- ☐ The facility has discontinued the use of solvents that contains known or probable human carcinogens. (See Appendix F for list of solvents)

Spray Booth Cleaning

- ☐ The facility does not use cleaning compounds that contain more than 8.0 percent VOC by weight, unless operators are cleaning conveyors, continuous coaters and their enclosures, or metal filters.
- ☐ The facility's solvent use is limited to 1.0 gallon per booth for preparation of booth surface for coating/protection.

Storage Containers

- ☐ Containers that are used for storing finishing, cleaning, adhesive, or washoff materials are closed when not in use.

Gun and Line Cleaning

- ☐ Gun and line cleaning solvent is collected into a closed container.
- ☐ Containers associated with cleaning are covered when not in use.

Washoff Operations

- ☐ Washoff tank is covered when not in use.
- ☐ The facility minimizes dripping by tilting and/or rotating the part to drain as much solvent as possible.
- ☐ The facility is allowing sufficient dry time for the part.

Work Practice and Implementation Plan

- ☐ The facility has developed a plan to implement these work practice standards and maintain onsite.

Formulation Assessment Plan for Finishing Operations

- ☐ The facility has:
 - Establish a baseline level for each VHAP of potential concern
 - Track annual usage VHAP of potential concern ; and
 - Reported all exceedences of baseline level, if any.

RECORDKEEPING REQUIREMENTS CHECKLIST

Finishing operations (Check one compliance method and attach all relevant records)

- ☐ Compliant coatings
 - Certified product data sheets for each coating and thinner subject to the emission limits presented in Chapter 2; and
 - The VHAP content, in lb VHAP/lb solids, as applied, for each coating subject to the emission limits presented in Chapter 2.
- ☐ Compliant coatings with continuous coaters
 - Option 1
 - Same as requirements for compliant coatings. Records must demonstrate that the VHAP content does not exceed the applicable emission limit.
 - Option 2
 - 1. Certified product data sheets for each coating and thinner;
 - 2. Record of all solvent and coating additions to the reservoir; and
 - 3. All viscosity measurements.
- ☐ Averaging
 - 1. Certified product data sheets for each coating participating in averaging;
 - 2. Records of the amount of coating and thinner used each month;
 - 3. Copies of the averaging calculation.
- ☐ Add-on control device
 - 1. Certified product data sheets for each coating;
 - 2. Copies of the calculations demonstrating equivalency of using a control system;
 - 3. Records of the daily average value of each continuously monitored parameter; and
 - 4. For facilities using a fluidized bed catalytic incinerator, records of the pressure drop across the catalyst bed.
- ☐ Compliant coatings and control device or averaging and control device
 - Maintain all records required by each individual option.

Gluing Operations

- ☐ Compliant contact adhesives
 1. Certified product data sheets for each contact adhesive subject to the emission limits presented in Chapter 2;
 2. If adhesives are thinned, data sheets showing contact adhesive and thinner usage and calculation of the as applied VHAP content; and
 3. Records documenting the process in which the contact adhesive was used.
- ☐ Add-on control devices
 1. Certified product data sheet for each contact adhesive subject to the emission limits presented in Chapter 2;
 2. Copies of calculations demonstrating the equivalency of using a control system;
 3. Records of the daily average value of each continuously monitored parameter; and
 4. For facilities using a fluidized bed catalytic incinerator, records of the pressure drop across the catalyst bed.

Work Practice Recordkeeping Requirements

- ☐ Operator training program
 1. Copy of program, including:
 - a list of personnel required to be trained;
 - an outline of the subjects to be covered;
 - lesson plans for training courses;
 2. Records documenting successful completion of the training program for each individual; and
 3. Records of date each individual was trained.
- ☐ Inspection and maintenance plan
 1. Copies of checklists documenting visual monthly inspection of equipment; and
 2. Records demonstrating timeframe for making repairs.
- ☐ Cleaning and washoff solvent accounting system
 1. Record of the quantity and type of organic solvent used each month for washoff and cleaning;
 2. Record of the number of pieces washed off and the reason why; and
 3. Record of the quantity of spent solvent generated each month by operation and whether it is recycled onsite or disposed offsite.
- ☐ Spray booth cleaning

Records of VOC content of material used for cleaning spray booths
- ☐ Application equipment requirements

Records documenting that conventional air spray guns are only being used as allowed, including:

 - if used for applying low VOC coatings, records showing that the VOC content is no greater than 1.0 lb VOC/lb solids;
 - if used for applying small quantities of finishing materials, other than for touchup and repair, records of total finishing materials usage and quantity applied with air spray gun.

- ☐ Formulation assessment plan for finishing operations
 1. The facility has maintained MSDS for coatings containing VHAP of potential concern; and
 2. The facility has maintained usage records for coatings containing VHAP of potential concern.
- ☐ Limitation on chemical composition of cleaning/washoff solvents

The facility has maintained MSDS for all solvents used for cleaning and/or washoff.

CHAPTER 7

QUESTIONS ON THE WOOD FURNITURE NESHAP

Since the NESHAP was promulgated in December of 1995, both the EPA and State and local agencies have received numerous questions concerning the applicability and requirements of the NESHAP. Following is a summary of those questions, and their answers, by topic area.

7.1 APPLICABILITY

To date, this topic has elicited the most questions. In general, the wood furniture NESHAP covers facilities manufacturing residential furniture, office furniture, kitchen and bathroom cabinets, store fixtures, contract furniture (furniture for hotels and motels), and furniture for schools, churches, restaurants, and other public facilities. The NESHAP is also applicable to facilities manufacturing component parts for these products. For example, a facility may only manufacture drawers that they sell to residential furniture manufacturers. If the source is a major source, it is subject to the requirements of the wood furniture NESHAP.

Following is a list of questions received concerning the applicability of the NESHAP and the responses to those questions. If you have a question on applicability that is not covered here, you should contact Bob Marshall of the Office of Enforcement and Compliance Assurance.

1. The Federal Register notice for the wood furniture NESHAP includes a list of SIC codes that represent wood furniture manufacturers. My facility is not included under one of those SIC codes. Are we subject to the NESHAP requirements?

The list of SIC codes in the wood furniture rule is intended only for guidance. A facility that only manufactures component parts that are then used by a wood furniture manufacturing facility may not operate under one of the listed SIC codes. However, they are still subject to the wood furniture NESHAP if they are a major source. Applicability determinations are based on the products manufactured at the facility and the facility's total HAP emissions, not on the facility's SIC code.

Conversely, a facility may operate under one of the SIC codes and still not be subject to the NESHAP. For example, SIC code 2531 includes facilities manufacturing seating for planes,

cars, and buses. Even though facilities manufacturing these products are operating under one of the listed SIC codes, they are not subject to the requirements of the wood furniture NESHAP because they are not manufacturing wood furniture.

2. Are facilities manufacturing hardwood flooring covered under the wood furniture NESHAP?

No. These facilities are not subject to the wood furniture NESHAP. However, they may be covered under the NESHAP for flatwood paneling that is currently being developed by the EPA.

3. Are facilities manufacturing ping pong and pool tables subject to the wood furniture NESHAP?

No. These facilities are not subject to the wood furniture NESHAP.

4. Are facilities manufacturing dowels and wood toys subject to the wood furniture NESHAP?

No. These facilities are not subject to the wood furniture NESHAP.

5. Are facilities manufacturing caskets subject to the wood furniture NESHAP?

No. These facilities are not subject to the wood furniture NESHAP.

6. Are area sources subject to the wood furniture NESHAP?

No. Only major sources, that is, sources that emit or have the potential to emit more than 10 tons of any one HAP or 25 tons of a combination of HAP are subject to the NESHAP.

7. Are facilities that refinish furniture subject to the wood furniture NESHAP?

No. Only furniture manufacturers are subject to the wood furniture NESHAP. Facilities that only refinish furniture are not subject to the NESHAP.

8. Are facilities that manufacture musical instruments subject to the wood furniture NESHAP?

No. However, a few facilities manufacture pianos and residential furniture at the same facility. If these facilities are major sources, including emissions from the piano manufacturing process, they are subject to the NESHAP.

9. Are facilities that manufacture shutters and doors subject to the wood furniture NESHAP?

No. These facilities are not subject to the wood furniture NESHAP, but they may be subject to the NESHAP for flatwood paneling manufacturers that the EPA is currently working on.

10. Are facilities that manufacture seat cushions subject to the wood furniture NESHAP?

The EPA recently amended the wood furniture NESHAP to address this issue (62 FR 31405). Facilities that only manufacture seat cushions are not subject to the wood furniture NESHAP. The EPA has developed a foam fabrication NESHAP that will regulate emissions from these facilities. However, wood furniture manufacturing facilities that manufacture their own seat cushions, including laminating fabric to the foam base, are subject to the NESHAP. The contact adhesives used to assemble the seat cushions are subject to an emission limit.

11. Are facilities that manufacture kitchen cabinets subject to the wood furniture NESHAP?

Yes. Kitchen cabinet manufacturers are subject to the wood furniture NESHAP if they are major sources.

7.2 DETERMINING MAJOR SOURCE STATUS

The wood furniture NESHAP only applies to major sources. It does not apply to area sources. However, because the definition of a major source is based on potential to emit it is often difficult to determine the major source status of a facilities. According to the Census of Manufactures, there are more than 11,000 facilities manufacturing wood furniture. The EPA estimates there are only 750 major sources based on actual emission estimates. This means that there are a significant number of area sources and major sources that are only major based on their potential to emit. Taken literally, the definition of potential to emit could mean that a five person kitchen cabinet shop could be a major source. Any facility with a spray gun has the potential to emit 10 tons of any one HAP or 25 tons of a combination of HAP. In order to lessen the burden on these small sources that would otherwise have to go through at least some minimal permitting process to limit their potential to emit, the EPA included material usage and emission limits in the NESHAP. Facilities below those limits are designated by rule as area sources and are therefore not subject to the NESHAP. These cutoff levels are presented in Chapter 1.

Even with the cutoff levels in the NESHAP, the EPA and State and local regulatory agencies have received numerous questions on how a facility can determine its major source status. These questions, and the responses, are summarized below.

1. If a facility uses materials at a rate above the cutoff level established in the NESHAP are they automatically a major source and subject to the NESHAP?

No. A facility may use more material than the cutoff levels established in the NESHAP and still not be subject to the NESHAP. The material usage cutoff level includes all materials, not just those containing HAP. Some or all of the materials used by a facility may not contain HAP so the facility's actual emissions may be significantly less than 10/25 tons/year. The material cutoff limit is a conservative limit to reduce the burden on very small facilities. However, many facilities may use more than this and still not be subject to the NESHAP. In some cases, the facility may have to obtain a federally enforceable limit on their potential to emit to avoid major source status.

2. If a facility emits more than 5 tons of any one HAP or 12.5 tons of a combination of HAP, that is, if they emit HAP at a greater rate than the cutoff level included in the NESHAP, are they automatically a major source and subject to the NESHAP.

No. Again, the cutoff levels are included in the NESHAP to automatically exempt the very small facilities. Other facilities may also be exempted from the requirements of the NESHAP, but they may have to obtain a federally enforceable limit on their potential to emit to avoid major source status and be exempted from the NESHAP.

3. If a facility is a major source as defined under Part 70, that is, Title V, are they subject to the wood furniture NESHAP?

Most wood furniture facilities that are required to obtain a Title V permit will also be major sources of HAP and will therefore be subject to the NESHAP. However, some sources are major sources under Title V because of their VOC emissions, not their HAP emissions. If a facility only used non-HAP VOC's, they would not be a major source of HAP emissions and therefore would not be subject to the NESHAP. This is more likely for facilities located in severe and extreme ozone nonattainment areas where the major source cutoff for VOC's is as low or lower than the major source cutoff for HAP.

7.3 DEFINITIONS

It is important that both wood furniture manufacturing facilities and State and local enforcement agencies familiarize themselves with the definitions included in the rule. For facilities using a compliant coatings approach to comply with the rule, the definitions are particularly

important. All coatings are not subject to an emission limit under the compliant coatings compliance option, so the definitions are key to determining what coatings are subject to a limit. A facility or a facility's coating supplier may have always referred to a particular coating as a stain, but if the coating does not fit the definition of stain included in the rule it may not be subject to an emission limit. Following is a clarification of definitions that the EPA and State and local enforcement agencies have reported receiving questions on.

1. Are wiping stains regulated as stains under the NESHAP?

One of the major problems in determining if a particular coating is a stain as defined in the wood furniture NESHAP is that there is inconsistency among wood furniture manufacturers and wood furniture coating suppliers in how they have identified coatings in the past. In the traditional long finishing sequence, used primarily by residential furniture manufacturers, the wiping stain is applied after the washcoat and before the sealer. Typically the wiping stain is a higher solids stain that is used in relatively small quantities. These stains are not subject to an emission limit under the NESHAP because (1) they typically have a higher solids content than the 8.0 percent limit specified in the NESHAP for stains, and (2) they are not applied directly to the substrate. However, some facilities and some coating suppliers refer to the initial stain that is applied to the substrate as a wiping stain or a wipe stain. This seems to be particularly common in the kitchen cabinet industry. In these cases, the wiping or wipe stain is subject to an emission limit if the solids content of the coating is no more than 8.0 percent by weight. In general, any stain not covered by the definition of stain in the NESHAP should not be a major source of emissions, particularly when compared to the emissions from the major coatings, that is, stain, washcoat, sealer, topcoat, primer, and enamel.

2. Are highlight stains regulated as stains under the NESHAP?

No. Highlight stains are typically applied after the washcoat. They do meet part of the definition of stain because they usually have a fairly low solids content, but they are not applied directly to the substrate. Again, usage of highlight stains and emissions from these stains should be minimal in comparison to the primary coatings used by the facility.

3. What is a certified product data sheet? Is it the same as a material safety data sheet?

The certified product data sheet (CPDS) is the primary method of demonstrating compliance with the coating and adhesive emission limits included in the rule. For facilities using a compliant coatings approach to comply with the rule, the CPDS are the only recordkeeping requirement. The CPDS will typically be supplied by your coating or adhesive supplier. The CPDS must include the total VHAP content of the material, by percent weight, the solids content, by percent weight, and the density of the coating. The material safety data sheet (MSDS) is required by OSHA, so that facility employees will know what compounds they are being exposed to and the quantities of those compounds. Unlike a material safety data sheet

(MSDS), the CPDS does not have to list the components in the coating. The CPDS only has to provide the total VHAP content. Facilities cannot use a MSDS to demonstrate compliance with the emission limits. They must have a CPDS for each coating.

4. What is the difference between a conventional air spray gun and a high volume low pressure spray (HVLP) spray gun?

A conventional air spray gun uses high pressure air to deliver the coating to the substrate. An HVLP gun also uses pressure to deliver the coating to the substrate, but the pressure is regulated to 10 psi or less. If a facility is operating an HVLP gun at greater than 10 psi, they are effectively using an HVLP gun as a conventional air spray gun and are likely in violation of the work practice standards limiting the use of HVLP guns.

7.4 COATING EMISSION LIMITS AND COMPLIANCE OPTIONS

Most facilities are expected to meet the coating emission limits using either compliant coatings or an averaging approach. The emission limits are based on the pounds of volatile HAP emitted/pound of solids used (lb VHAP/lb solids), as applied. Example calculations for determining the lb VHAP/lb solids of a coating are included in an earlier chapter. As discussed earlier, the NESHAP only limits the VHAP content of the primary coatings for facilities using a compliant coatings approach. Low usage coatings such as fillers and highlight stains are not subject to an emission limit. Facilities using an averaging approach must include all of the coatings they use in the averaging equation.

1. How does a facility demonstrate compliance if they are using the compliant coatings compliance option?

The facility must maintain a certified product data sheet for each coating subject to an emission limit. The facility should also maintain a CPDS for each thinner that is added to any of these coatings. The thinners cannot contain more than 10.0 percent HAP by weight. The facility does not have to maintain records of thinner usage, however. Any coating sample taken by State or local agency enforcement personnel should have a VHAP content of no more than 1.0 lb VHAP/lb solids (0.8 for new sources) and any thinner sample should have a VHAP content of no more than 10.0 percent by weight.

2. What does “as applied” mean?

The NESHAP limits the VHAP content of the coating as applied. For facilities using a compliant coatings approach, this means that the VHAP content of the coating should not exceed 1.0 lb/lb solids (0.8 for new sources) after thinners, catalysts, drying agents, etc. have been

added. The coating that is leaving the spray gun and being applied to the substrate should not exceed 1.0 (0.8). For facilities using an averaging approach, this means that the VHAP contribution from all thinners, catalysts, etc. should be included in the averaging equation.

3. How does a facility demonstrate compliance if they are using an averaging approach?

The facility must maintain certified product data sheets for every coating and thinner they use. They must also maintain usage records for each coating and thinner. Using the lb VHAP/lb solids value for each coating, the VHAP content for each thinner, and the usage values, the facility should use the averaging equation presented in the rule to calculate the average lb VHAP/lb solids each month. This should be no more than 1.0 for existing sources or 0.8 for new sources.

4. Is there a limit on the VHAP content of the thinners if the facility is using an averaging approach to comply with the rule?

No. The facility can use any thinners they wish if they are using an averaging approach to comply with the rule. There is no limit on the VHAP content of the thinners.

5. What about washcoats?

The NESHAP includes two compliance options for facilities that use washcoats and a compliant coatings approach to comply with the rule. These options were included to minimize the recordkeeping burden on the industry. The first compliance option is the same as that for the other coatings in a compliant coatings approach. The facility must use a washcoat that emits no more than 1.0 lb VHAP/lb solids (0.8 for new sources), as applied, and any thinners used to thin the washcoat must have a VHAP content of no more than 10.0 percent by weight. If enforcement personnel take a sample of the washcoat for analysis, the VHAP content of the washcoat should be no more than 1.0 lb VHAP/lb solids (0.8 for new sources). If the analysis indicates the VHAP content is greater than 1.0 (0.8), the facility is out of compliance.

The first compliance option applies to facilities that purchase their washcoats from a supplier. However, many wood furniture manufacturing facilities formulate their washcoat onsite by diluting their sealer. These facilities can demonstrate compliance with the washcoat emission limit by using a sealer that emits no more than 1.0 lb VHAP/lb solids, maintaining a CPDS for the sealer, using a thinner to dilute the sealer than contains no more than 3.0 percent VHAP by weight, and maintaining a CPDS for the thinner. The washcoat is automatically deemed compliant if the sealer has a VHAP content of no more than 1.0 (0.8) and the thinner used to dilute the sealer has a VHAP content of no more than 3.0 percent by weight. Even if an analysis of the sample reveals that the actual VHAP content of the washcoat is greater than 1.0 (0.8), the washcoat is still considered compliant because it was formulated with a compliant sealer and a compliant (less than 3.0 percent VHAP by weight) thinner.

6. Are aerosol spray paints used for touchup and repair subject to an emission limit?

No. There is no emission limit for aerosol spray paints that are used for touchup and repair.

7. Are inks subject to an emission limit under the wood furniture NESHAP?

Inks are considered coatings under the wood furniture NESHAP. However, they are not one of the primary coatings used by the industry, so they are not subject to an emission limit for facilities using a compliant coatings approach. However, facilities using an averaging approach to comply with the rule must include the inks in the averaging equation.

8. If inks are applied to the wood furniture over the topcoat (that is, after completion of the coating operation) do they fall under the VHAP restrictions for coatings?

As discussed in the previous question, inks are considered coatings. However, there is no limit on the VHAP content of the inks for facilities using a compliant coatings approach no matter where the ink is applied in the finishing process. If the facility is using an averaging approach to comply with the rule, the inks must be included in the averaging equation even if they are applied over the topcoat.

9. According to 40 CFR 63.804(g)(i), a facility using a continuous coater can comply with the regulations by using compliant coatings, as determined by the VHAP content of the coating in the reservoir and the VHAP content determined from records. Can this method be used to comply if additional solvent is added to the coating in the reservoir to replace the solvent lost due to evaporation, or must the facility use viscosity measurements to comply as outlined in 63.804(g)(ii)? Would this also pertain to coatings not used in continuous coaters, that is, dip tanks or pressure pots?

If a facility adds solvent to the continuous coater to replace that lost by evaporation, the facility can use one of two methods to determine compliance. For both compliance options, the VHAP content of the coating in the reservoir should never exceed 1.0 lb VHAP/lb solids, even after solvent additions. In addition, the facility must demonstrate one of two things. The facility must always maintain records, including the records showing solvent additions, that demonstrate that the coating has a VHAP content of no more than 1.0 lb VHAP/lb solids, as applied; or the facility must measure the viscosity of the initial coating in the reservoir and each time solvent is added to the reservoir. The facility must maintain records of the viscosity measurements. If the viscosity of the coating falls below the viscosity of the initial viscosity of the coating, the facility is out of compliance.

These two compliance options do not apply to coatings used in dip tanks or pressure pots. The VHAP content of these coatings, as determined by a sample of the coating, should not exceed 1.0 lb VHAP/lb solids, and the records, including records of solvent additions, should demonstrate that the VHAP content of the coating never exceeded 1.0 lb VHAP/lb solids. There is no option in this case of monitoring the viscosity of the coating in lieu of having the records demonstrate compliance with the emission limit.

7.5 ADHESIVE EMISSION LIMITS AND COMPLIANCE OPTIONS

1. Is there an emission limit on adhesives other than contact adhesives?

No. The only adhesives subject to an emission limit are contact adhesives. The industry also uses urea-formaldehyde, polyvinyl acetate, and hot melt adhesives, but none of these adhesive types are subject to an emission limit. Hot melt adhesives are 100 percent solids adhesives so they do not emit VHAP. Polyvinyl acetate adhesives do emit small quantities of the HAP vinyl acetate, but they are lower emitting than the other types of adhesives so the EPA did not want to discourage their usage by placing an emission limit on them. Urea-formaldehyde emissions do emit formaldehyde, but they are primarily used for veneering and plywood manufacturing. These operations will be covered under the particleboard/plywood manufacturing NESHAP.

2. Can a facility average among their contact adhesives to meet the emission limit?

No. All contact adhesives must be compliant. A facility cannot average among their contact adhesives to meet the limit.

7.6 WORK PRACTICE STANDARDS

The wood furniture NESHAP includes work practice standards for reducing emissions from cleaning, washoff, finishing, and gluing operations. These work practice standards are an important part of the rule. For the most part, the work practice standards are straightforward, but the EPA has received a few questions concerning the requirements. Following is a summary of these questions and their responses.

1. Does the limitation on conventional air spray guns also apply to spray guns used to apply adhesives?

No. The limitation only applies to spray guns used to apply finishing materials. Any type of spray gun may be used to apply adhesives.

2. What is a normally closed container?

The NESHAP requires all containers used to store solvent or solvent containing materials to be closed when not in use. These containers are referred to as normally closed containers. They are containers that should be closed during most periods, but they may be open if an operator is filling or emptying the container.

3. How do I determine the de minimis levels for the VHAP of potential concern included in Table 6?

In developing the formulation assessment plan, the EPA worked with the coating suppliers to identify VHAP of potential concern that are currently used by industry. The EPA

then developed de minimis values for these VHAP based on 70-year exposure levels. These VHAP and their de minimis values are included in Table 5. However, industry may use VHAP of potential concern that are identified in Table 6 but are not listed in Table 5. If a facility uses any of these pollutant after November of 1998, the baseline level is equivalent to the de minimis level. The rule states that the de minimis level should be based on 70 year exposure levels and data provided in the rulemaking pursuant to Section 112(g). However, the final Section 112(g) rulemaking did not include these de minimis values. The EPA is currently addressing litigation issues related to the formulation assessment plan. A Federal Register notice addressing any changes in the formulation assessment plan resulting from the litigation is expected in late fall of 1997. The EPA will include de minimis levels for the pollutants in Table 6 in that notice.

4. Do the VHAP of potential concern found in inks fall under the formulation assessment plan requirements?

Yes. The inks are considered coatings so any VHAP of potential concern that are in the inks must be tracked under the formulation assessment plan.

5. Section 63.803(b)(4) dictates that a facility maintain a description of the methods used to demonstrate successful completion of the operator training course. What will be the definition of successful completion?

Whether or not an operator has successfully completed the training course will be up to the facility for the most part. If an operator is still not applying coatings correctly after training, the facility is the one that will pay in extra coating costs. However, the facility should maintain records documenting that the operator has completed the training. For example, the facility may present each operator with a certificate that is signed by both the facility and the operator upon the completion of training. An inspector may ask to see the records and may also observe the operator to ensure he or she is following the work practice standards and is using proper application techniques.

APPENDIX A

ACRONYMS AND DEFINITIONS

A.1 LIST OF ACRONYMS

Following is a list of acronyms that are used throughout the manual. Many of these terms are included in the definitions in A.2, but the list presented here is intended to serve as a handy reference if you come across an acronym you are not familiar with. Some of these acronyms are not used in this manual, but you may come across them when studying other material related to the control of VOC and/or HAP emissions.

Acronym	Meaning
BACT	Best available control technology
CFR	Code of Federal Regulations
CPDS	Certified product data sheet
CTG	Control Techniques Guideline
EPA	Environmental Protection Agency
FAP	Formulation assessment plan
HAP	Hazardous air pollutant
HVLP	High volume low pressure
LAER	Lowest achievable emission rate
MACT	Maximum Achievable Control Technology
MSDS	Material safety data sheet
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
RACT	Reasonably Available Control Technology
SIP	State implementation plan
VHAP	Volatile hazardous air pollutant
VOC	Volatile organic compound

A.2 DEFINITIONS

These definitions are from commonly used terms in this document. However, it is not an exhaustive list. The list is limited to terms that are used in this implementation manual. Note that these definitions are based on EPA's definitions, which may not always be consistent with the industry's definitions. Because the standards are based on EPA's definitions, however, those are the definitions included here.

Adhesive means any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means. For the purposes of the wood furniture NESHAP, adhesives are not considered coatings or finishing materials. Products used on humans

and animals, adhesive tape, contact paper, or any other product with an adhesive incorporated onto or in an inert substance are not considered adhesives under the wood furniture NESHAP.

Aerosol adhesive means a contact adhesive that is dispensed from a pressurized container as a suspension of fine solid or liquid particles in gas.

As applied means the VOC, VHAP, and solids content of the coating or contact adhesive that is actually used for coating or gluing the substrate. It includes the contribution of materials used for in-house dilution of the coating or contact adhesive.

Basecoat means a coat of colored material, usually opaque, that is applied before graining inks, glazing coats, or other opaque finishing materials, and is usually topcoated for protection.

Capture device means a hood, enclosed room, floor sweep, or other means of collecting solvent emissions or other pollutants into a duct so that the pollutant can be directed to a pollution control device such as an oxidizer or carbon adsorber.

Capture efficiency means the fraction of all organic vapors generated by a process that are directed to a control device.

Certified product data sheet (CPDS) means documentation furnished by coating or adhesive suppliers or an outside laboratory that provides the VHAP content, VOC content, solids content, and density of a finishing material, contact adhesive, or solvent. The VHAP content should be measured by EPA Method 311, an equivalent or alternative method, or formulation data if all HAP present in the coating or contact adhesive is solvent. The reportable HAP content should represent the maximum aggregate emissions potential of the finishing material, contact adhesive or solvent in concentrations greater than or equal to 1.0 percent by weight or 0.1 percent for HAP that are carcinogens, as defined by the Occupational Safety and Health Administration Hazard Communication Standard (29 CFR 1910), as formulated. The VOC content, solids content, and density of the coating or contact adhesive should be measured by EPA Method 24, an alternative or equivalent method, or formulation data if all of the VOC present in the coating or contact adhesive is solvent. The purpose of the CPDS is to assist the facility in demonstrating compliance with the NESHAP emission limits.

(Note: Because the optimum analytical conditions under EPA Method 311 vary by coating, the coating or adhesive supplier may also choose to include on the CPDS the optimum analytical conditions for analysis of the coating, adhesive, or solvent using EPA Method 311. Such information may include, but not be limited to, separation column, oven temperature, carrier gas, injection port temperature, extraction solvent, and internal standard.)

Cleaning operations means operations in which organic solvent is used to remove coating materials or adhesives from equipment used in wood furniture manufacturing operations.

Coating means a protective, decorative, or functional film applied in a thin layer to a surface. Such materials include, but are not limited to, paints, topcoats, varnishes, sealers, stains,

washcoats, basecoats, enamels, inks, and temporary protective coatings. Aerosol spray paints used for touch-up and repair are not considered coatings under the NESHAP.

Coating solids (or solids) means the part of the coating which remains after the coating is dried or cured; solids content is determined using data from EPA Method 24.

Compliant coating/contact adhesive means a finishing material, contact adhesive, or strippable booth coating that meets the CTG and/or NESHAP emission limits specified in Tables 2-2 and 2-4 of this manual.

Contact adhesive means an adhesive that is applied to two substrates, dried, and mated under only enough pressure to result in good contact. The bond is immediate and is sufficiently strong to hold pieces together without further clamping, pressure, or airing.

Continuous coater means a finishing system that continuously applies finishing materials onto furniture parts moving along a conveyor. Finishing materials that are not transferred to the part are recycled to a reservoir. Several types of application methods can be used with a continuous coater including spraying, curtain coating, roll coating, dip coating, and flow coating.

Control device (also referred to as an add-on control device in this manual) means any equipment that reduces the quantity of a pollutant that is emitted to the air. The device may destroy or secure the pollutant for subsequent recovery. Includes, but is not limited to, oxidizers, carbon adsorbers, and condensers.

Control device efficiency means the ratio of the pollution released by a control device to the pollution introduced to the control device.

Control system means the combination of capture and control devices used to reduce emissions to the atmosphere.

Conventional air spray means a spray coating method in which the coating is atomized by mixing it with compressed air and applied at an air pressure greater than 10 pounds per square inch (gauge) at the point of atomization. Airless and air assisted airless spray technologies are not conventional air spray because the coating is not atomized by mixing it with compressed air. Electrostatic spray technology is also not considered conventional air spray because an electrostatic charge is employed to attract the coating to the workpiece.

Emission means the release or discharge, whether directly or indirectly, of HAP into the ambient air.

Enamel means a coat of colored material, usually opaque, that is applied as a protective topcoat over a basecoat, primer, or previously applied enamel coats. In some cases, another finishing material may be applied as a topcoat over the enamel.

Equipment leak means emissions of VHAP from pumps, valves, flanges, or other equipment used to transfer or apply coatings, adhesives, or organic solvents.

Finishing material means a coating used in the wood furniture industry. Such materials include, but are not limited to, stains, basecoats, washcoats, enamels, sealers, and topcoats.

Finishing operation means those operations in which finishing material is applied to a substrate and is subsequently air-dried, cured in an oven, or cured by radiation.

Foam adhesive means a contact adhesive used for gluing foam to fabric, foam to foam, and fabric to wood.

Gluing operation means those operations in which contact adhesives are used to join components, for example, to apply a laminate to a wood substrate or foam to fabric.

Incidental wood furniture manufacturer means a major source that is primarily engaged in the manufacture of products other than wood furniture or wood furniture components and uses no more than 100 gallons per month of finishing material or adhesives in the manufacture of wood furniture or wood furniture components.

Material Safety Data Sheet (MSDS) means the documentation required for hazardous chemicals by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910) for a solvent, cleaning material, contact adhesive, coating, or other material that identifies select reportable hazardous ingredients of the material, safety and health considerations, and handling procedures.

Nonporous substrate means a surface that is impermeable to liquids. Examples include metal, rigid plastic, flexible vinyl, and rubber.

Organic solvent means a volatile organic liquid that is used for dissolving or dispersing constituents in a coating, adjusting the viscosity of a coating or adhesive, or cleaning equipment. When used in a coating or adhesive, the organic solvent evaporates during drying and does not become a part of the dried film.

Overall control efficiency means the efficiency of a control system, calculated as the product of the capture and control device efficiencies, expressed as a percentage.

Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design.

Research or laboratory facility means any stationary source whose primary purpose is to conduct research and development to develop new processes and products where such source is operated under the close supervision of technically trained personnel and is not engaged in the manufacture of products for commercial sale in commerce, except in a de minimis manner.

Sealer means a finishing material used to seal the pores of a wood substrate before additional coats of finishing material are applied. Special purpose finishing materials that are used in some finishing systems to optimize aesthetics are not sealers.

Solvent means a liquid used in a coating or contact adhesive to dissolve or disperse constituents and/or to adjust viscosity. It evaporates during drying and does not become a part of the dried film.

Stain means any color coat having a solids content by weight of no more than 8.0 percent that is applied in single or multiple coats directly to the substrate. Includes, but is not limited to, nongrain raising stains, equalizer stains, prestains, sap stains, body stains, no-wipe stains, penetrating stains, and toners.

Strippable spray booth coating means a coating that (1) is applied to a spray booth wall to provide a protective film to receive overspray during the finishing operations; (2) that is subsequently peeled off and disposed; and (3) by achieving (1) and (2) reduces or eliminates the need to use organic solvents to clean spray booth walls.

Substrate means the surface onto which a coating or contact adhesive is applied (or into which a coating or contact adhesive is impregnated).

Thinner means a volatile liquid that is used to dilute coatings or contact adhesives (to reduce viscosity, color strength, and solids, or to modify drying conditions).

Topcoat means the last film-building finishing material that is applied in a finishing system.

Touch-up and repair means the application of finishing materials to cover minor finishing imperfections.

VHAP means any hazardous air pollutant listed in Table E-1.

VHAP of potential concern means any VHAP from the list presented in Table A-1.

Volatile organic compound (VOC) means any organic compound that participates in atmospheric photochemical reactions, that is, any organic compound other than those that the Administrator designates as having negligible photochemical reactivity. A VOC may be measured by a reference method, an equivalent method, an alternative method, or by procedures specified in any rule. However, these methods may also measure nonreactive organic compounds. In such cases, the owner or operator may exclude the nonreactive organic compounds when determining compliance with a standard. For a list of compounds that the Administrator has designated as having negligible photochemical reactivity, refer to 40 CFR 51.00.

Washcoat means a transparent special purpose finishing material having a solids content by weight of 12.0 percent or less. Washcoats are applied over initial stains to protect, to control color, and to stiffen the wood fibers in order to aid sanding.

Washoff operations means those operations in which organic solvent is used to remove coating from wood furniture or a wood furniture component.

Wood furniture means any product made of wood, a wood product such as rattan or wicker, or an engineered wood product such as particleboard that is manufactured under any of the following standard industrial classification codes: 2434, 2511, 2512, 2517, 2519, 2521, 2531, 2541, 2599, or 5712.

Wood furniture component means any part that is used in the manufacture of wood furniture. Examples include, but are not limited to, drawer sides, cabinet doors, seat cushions, and laminated tops. However, foam seat cushions manufactured and fabricated at a facility that does not engage in any other wood furniture or wood furniture component manufacturing operation are excluded from this definition.

Wood furniture manufacturing operations means the finishing, gluing, cleaning, and washoff operations associated with the production of wood furniture or wood furniture components.

TABLE A-1. VHAP OF POTENTIAL CONCERN

CAS No.	Chemical name
"NONTRESHOLD" POLLUTANTS	
92671	4-Aminobiphenyl
96093	Styrene oxide
64675	Diethyl sulfate
59892	N-Nitrosomorpholine
68122	Dimethyl formamide
80319	Hexamethylphosphoramide
60355	Acetamide
101779	4,4'-Methylenedianiline
90040	o-Anisidine
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
92875	Benzidine
684935	N-Nitroso-N-methylurea
542881	Bis(chloromethyl)ether
79447	Dimethyl carbamoyl chloride
75558	1,2-Propylenimine (2-Methyl aziridine)
57147	1,1-Dimethyl hydrazine
96128	1,2-Dibromo-3-chloropropane
62759	N-Nitrosodimethylamine
50328	Benzo (a) pyrene
1336363	Polychlorinated biphenyls (Aroclors)
76448	Heptachlor
119937	3,3'-Dimethyl benzidine
79061	Acrylamide
118741	Hexachlorobenzene
57749	Chlordane
1120714	1,3-Propane sultone
106990	1,3-Butadiene
53963	2-Acetylaminoflourine
53963	3,3'-Dichlorobenzidine
58899	Lindane (hexachlorcyclohexane, gamma)
95807	2,4-Toluene diamine
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)
122667	1,2 - Diphenylhydrazine
8001352	Toxaphene (chlorinated camphene)
121142	2,4-Dinitrotoluene
119904	3,3'-Dimethoxybenzidine
50000	Formaldehyde

TABLE A-1. (continued)

CAS No.	Chemical name
101144	4,4'-Methylene bis(2-chloroaniline)
107131	Acrylonitrile
106934	Ethylene dibromide(1,2-Dibromoethane)
72559	DDE (1,1-p-chlorophenyl 1-2 dichloroethylene)
510156	Chlorobenzilate
62737	Dichlorvos
75014	Vinyl chloride
75218	Ethylene oxide
96457	Ethylene thiourea
593602	Vinyl bromide (bromoethene)
67663	Chloroform
87865	Pentachlorophenol
51796	Ethyl carbamate (Urethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
78875	Propylene dichloride (1,2-Dichloropropane)
56235	Carbon tetrachloride
71432	Benzene
140885	Ethyl acrylate
75569	Propylene oxide
62533	Aniline
106467	1,4-Dichlorobenzene(p)
88062	2,4,6-Trichlorophenol
117817	Bis(2-ethylhexyl)phthalate (DEHP)
95534	o-Toluidine
114261	Propoxur
79016	Trichloroethylene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
75070	Acetaldehyde
75252	Bromoform
133062	Captan
106898	Epichlorohydrin
75092	Methylene chloride (Dichloromethane)
127184	Tetrachloroethylene (Perchloroethylene)
53703	Dibenz (ah) anthracene
218019	Chrysene
60117	Dimethyl aminoazobenzene
56553	Benzo (a) anthracene
205992	Benzo (b) fluoranthene

TABLE A-1. (continued)

CAS No.	Chemical name
79469	2-Nitropropane
542756	1,3-Dichloropropene
57976	7, 12-Dimethylbenz(a)anthracene
225514	Benz(c)acridine
193395	Indeno(1,2,3-cd)pyrene
189559	1,2:7,8-Dibenzopyrene
79345	1,1,2,2-Tetrachloroethane
91225	Quinoline
75354	Vinylidene chloride (1,1-Dichloroethylene)
87683	Hexachlorobutadiene
82688	Pentachloronitrobenzene (Quintobenzene)
78591	Isophorone
79005	1,1,2-Trichloroethane
74873	Methyl chloride (Chloromethane)
67721	Hexachloroethane
1582098	Trifluralin
1319773	Cresols/Cresylic acid (isomers and mixture)
108394	m-Cresol
75343	Ethylidene dichloride (1,1-Dichloroethane)
95487	o-Cresol
106445	p-Cresol
74884	Methyl iodide (Iodomethane)
100425	Styrene ^a
107051	Allyl chloride
334883	Diazomethane
95954	2,4,5 - Trichlorophenol
133904	Chloramben
106887	1,2 - Epoxybutane
108054	Vinyl acetate
126998	Chloroprene
123319	Hydroquinone
92933	4-Nitrobiphenyl

TABLE A-1. (continued)

CAS No.	Chemical name
"HIGH-CONCERN" POLLUTANTS	
56382	Parathion
13463393	Nickel Carbonyl
60344	Methyl hydrazine
75218	Ethylene oxide
151564	Ethylene imine
77781	Dimethyl sulfate
107302	Chloromethyl methyl ether
57578	beta-Propiolactone
100447	Benzyl chloride
98077	Benzotrichloride
107028	Acrolein
584849	2,4 - Toluene diisocyanate
75741	Tetramethyl lead
78002	Tetraethyl lead
12108133	Methylcyclopentadienyl manganese
624839	Methyl isocyanate
77474	Hexachlorocyclopentadiene
62207765	Fluomine
10210681	Cobalt carbonyl
79118	Chloroacetic acid
534521	4,6-Dinitro-o-cresol, and salts
101688	Methylene diphenyl diisocyanate
108952	Phenol
62384	Mercury, (acetato-o) phenyl
98862	Acetophenone
108316	Maleic anhydride
532274	2-Chloroacetophenone
51285	2,4-Dinitrophenol
108864	2-Methoxy ethanol
98953	Nitrobenzene
74839	Methyl bromide (Bromomethane)
75150	Carbon disulfide
121697	N,N-Dimethylaniline

TABLE A-1. (continued)

CAS No.	Chemical name
"UNRANKABLE" POLLUTANTS	
106514	Quinone
123386	Propionaldehyde
120809	Catechol
85449	Phthalic anhydride
463581	Carbonyl sulfide
132649	Dibenzofurans
100027	4-Nitrophenol
540841	2,2,4-Trimethylpentane
11422	Diethanolamine
822060	Hexamethylene-1,6-diisocyanate
-	Glycol ethers ^b
-	Polycyclic organic matter ^c

* = Currently an EPA weight of evidence classification is under review

^aThe EPA does not currently have an official weight-of-evidence classification for styrene. For purposes of this rule, styrene is treated as a "nonthreshold" pollutant. (See data report form in appendix A of the hazard ranking technical background document.)

^bExcept for 2-ethoxy ethanol, ethylene glycol monobutyl ether, and 2-methoxy ethanol.

^cExcept for benzo(b)fluoranthene, benzo(a)anthracene, benzo(a)pyrene, 7,12-dimethylbenz(a)anthracene, benz(c)acridine, chrysene, dibenz(ah)anthracene, 1,2:7,8-dibenzopyrene, indeno(1,2,3-cd)pyrene, but including dioxins and furans.

APPENDIX B.

LIST OF CONTACTS

This appendix includes a listing of State, EPA, and industry contacts.

B.1 STATE CONTACTS

Table B-1 is a list of State agencies. In some cases, you may need to work with a local agency, but the State agency will be able to refer you to the local agency if necessary. If you are a small business, they can also refer you to the State's Small Business Ombudsman and/or the State Small Business Assistance Program.

TABLE B-1. LISTING OF STATE AGENCIES

State	Name of Agency	Phone No.
Alabama	Alabama Department of Environmental Management, Air Division	(205) 271-7861
Alaska	Department of Environmental Conservation	(907) 465-5100
Arizona	Office of Air Quality	(602) 207-2308
Arkansas	Department of Pollution Control and Ecology	(501) 562-7444
California	Air Resources Board	(916) 322-2990
Colorado	Department of Health, Air Pollution Control Division	(303) 692-3100
Connecticut	Air Management Bureau	(203) 566-2690
Delaware	Department of Natural Resources and Environmental Control, Division of Air and Waste Management	(302) 739-4764
Florida	Department of Environmental Protection	(904) 488-0114
Georgia	Air Protection Branch	(404) 363-7000
Hawaii	Clean Air Branch	(808) 586-4200
Idaho	Department of Health and Welfare, Division of Environmental Quality	(208) 334-0502
Illinois	Environmental Protection Agency, Division of Air Pollution Control	(217) 782-7326
Indiana	Department of Environmental Management	(317) 232-8222
Iowa	Department of Natural Resources	(515) 281-5145
Kansas	Bureau of Air and Radiation	(913) 296-1593
Kentucky	Division for Air Quality	(502) 564-3382
Louisiana	Department of Environmental Quality, Office of Air Quality and Radiation Protection	(504) 765-0219
Maine	Bureau of Air Quality Control, Department of Environmental Protection	(207) 289-2437
Maryland	Air & Radiation Management Administration	(410) 631-3255
Massachusetts	Division of Air Quality Control	(617) 292-5593
Michigan	Air Quality Division, Department of Natural Resources	(517) 373-7023

State	Name of Agency	Phone No.
Minnesota	Air Pollution Control, Pollution Control Agency	(612) 296-7331
Mississippi	Department of Environmental Quality	(601) 961-5171
Missouri	Department of Natural Resources/Air Pollution Control Program	(314) 751-4817
Montana	State Department of Health and Environmental Sciences	(406) 444-3454
Nebraska	Air Quality Program, Department of Environmental Quality	(402) 471-2189
Nevada	Bureau of Air Quality/Division of Environmental Protection	(702) 687-4670
New Hampshire	Department of Environmental Services, Air Resources Division	(603) 271-1370
New Jersey	Department of Environmental Protection and Energy, Air Pollution Control Program	(609) 292-6704
New Mexico	Environmental Department/Air Quality Bureau	(505) 827-2850
New York	Department of Environmental Conservation, Division of Air Resources	(518) 457-7230
North Carolina	Division of Environmental Management	(919) 733-3340
North Dakota	State Department of Health	(701) 221-5188
Ohio	Ohio Environmental Protection Agency	(614) 644-2270
Oklahoma	Department Environmental Quality/Air Quality Division	(405) 271-5220
Oregon	Air Quality Division, Department of Environmental Quality	(503) 229-5359
Pennsylvania	Department of Environmental Resources, Bureau of Air Quality	(717) 787-9702
Rhode Island	Division of Air Resources	(401) 277-2808
South Carolina	Department of Health and Environmental Control, Bureau of Air Quality	(803) 734-4750
South Dakota	Department of Environment and Natural Resources, Division of Environmental Regulation	(605) 773-3351
Tennessee	Tennessee Division of Air Pollution Control	(615) 532-0554
Texas	Texas Natural Resources Conservation Commission	(512) 451-5711
Utah	Division of Air Quality, Department of Environmental Quality	(801) 536-4000
Vermont	Air Pollution Control Division, Agency of Natural Resources	(802) 244-8731
Virginia	Department of Air Pollution Control	(804) 786-2378
Washington	State Department of Ecology	(206) 459-6256
West Virginia	Air Pollution Control Commission	(304) 348-4022
Wisconsin	Department of Natural Resources, Bureau of Air Management	(608) 266-7718
Wyoming	Air Quality Division, Department of Environmental Quality	(307) 777-7391

B.2 EPA CONTACTS

If you have questions for EPA, the best place to start is the EPA regional office for your State. They will either be able to answer your questions or refer you to someone who can. Table

B-2 includes a list of the EPA regions, the States they cover, and their telephone number and location.

TABLE B-2. EPA REGIONS

Region	Phone No.	States covered	Address
1	(617) 565-3595	CT, ME, MA, NH, RI, VT	Janet Bowen Air Toxics Coordinator J.F.K. Federal Bldg. One Congress Street Boston, MA 02203
2	(212) 637-4023	NJ, NY	Umesh Dholakia Air Toxics Coordinator 290 Broadway Street New York, NY 10007-1866
3	(215) 566-2114	DE, MD, PA, VA, WV & District of Columbia	Dianne Walker Air Toxics Coordinator 841 Chestnut Bldg. Philadelphia, PA 19107
4	(404) 562-9131	AL, FL, GA, KY, MS, NC, SC, TN	Lee Page Air Toxics Coordinator Atlanta Federal Center 61 Forsyth Street SW Atlanta, GA 30303-3104
5	(312) 886-6793	IL, IN, MI, WI, MN & OH	Bruce Varner Air Toxics Coordinator 77 West Jackson Blvd. Chicago, IL 60604-3507
6	(214) 665-2156	AR, LA, NM, OK, & TX	Robert Todd Air Toxics Coordinator 1445 Ross Avenue 12th Floor, Suite 1200 Dallas, TX 75202-2733
7	(913) 551-7566	IA, KS, MO, NE	Richard Tripp Air Toxics Coordinator 726 Minnesota Avenue Kansas City, KS 66101
8	(303) 312-6971	CO, MT, ND, SD, UT, WY	Heather Rooney Air Toxics Coordinator 999 18th Street Suite 500 Denver, CO 80202-2466

Region	Phone No.	States covered	Address
9	(415) 744-1200	AZ, CA, HI, NV	Air Division 75 Hawthorne Street San Francisco, CA 94105
10	(206) 553-8760	AK, ID, WA, OR	Andrea Longhouse Air Toxics Coordinator Atlanta Federal Center 1200 Sixth Avenue Seattle, WA 98101

B.3 TRADE ASSOCIATIONS

Following is a list of contacts from the major trade associations representing the wood furniture industry and wood furniture coating suppliers.

American Furniture Manufacturers Association

P.O. Box HP-7
High Point, NC 27261
Phone: (910) 884-5000

Business and Institutional Furniture Manufacturers Association

2680 Horizon Drive S.E.
Grand Rapids, MI 49546
Phone: (616) 285-3963

Grand Rapids Area Furniture Manufacturers Association

4362 Cascade Road, S.E., Suite 113
Grand Rapids, MI 49506
Phone: (616) 942-6225 Fax: (616) 942-1730

Kitchen Cabinet Manufacturers Association

1899 Preston White Drive
Reston, VA 22091-4326
Phone: (703) 264-1690

National Paint and Coatings Association

1500 Rhode Island Avenue, NW
Washington, DC 20005
Phone: (202) 462-6272

APPENDIX C.

DETAILED TABLE OF CONTENTS FOR THE NESHAP

Although we hope that this manual will answer most of the your questions concerning the NESHAP, there may still be times when you will have to go directly to the regulation for the answer to specific questions. Hopefully, the table of contents presented in Table C-1 will make the search easier.

TABLE C-1. NESHAP TABLE OF CONTENTS

Requirement	Location in Regulation
<i>Applicability</i>	
Applicability of the regulation	63.800(a)
Sources specifically exempted from the regulation	63.800(b)
Exemption for research and laboratory facilities	63.800(c)
List of sections of EPA's General Provisions regulation (subpart N) that apply to sources covered under this regulation	63.800(d)
Compliance dates for existing sources	63.800(e)
Compliance date for new sources	63.800(f)
Guidance for determining if source is reconstructed	63.800(g)
<i>Definitions and Nomenclature</i>	
Definitions used in the regulation	63.801(a)
Definitions of terms used in equations in the regulation	63.801(b)
<i>Emission Limits</i>	
Emission limits for existing sources	63.802(a)
Emission limits for new sources	63.802(b)
<i>Work Practice Standards</i>	
Work practice implementation plan	63.803(a)
Operator training requirements	63.803(b)
Inspection and maintenance plan	63.803(c)
Cleaning and washoff solvent accounting system	63.803(d)
Chemical composition of cleaning and washoff solvents	63.803(e)
Spray booth cleaning restrictions	63.803(f)
Storage requirements	63.803(g)
Application equipment requirements	63.803(h)
Gun and line cleaning	63.803(I)&(j)
Washoff operations	63.803(k)
Formulation assessment plan	63.803(l)
<i>Compliance Provisions</i>	

TABLE C-1. (continued)

Requirement	Location in Regulation
Compliance options for finishing operations	63.804(a)&(d)
Compliance options for gluing operations	63.804(b),(c) & (e)
Methods to demonstrate initial compliance	63.804(f)
Methods to demonstrate continuous compliance	63.804(g)
<i>Performance Test Methods</i>	
Test methods for determining the HAP content of coatings and adhesives (cited here, but actual methods will be in 40 CFR part 60, Appendix A)	63.805(a)
Test methods for sources using control device to comply with the regulation	63.805(b),(c), (d),&(e)
<i>Recordkeeping Requirements</i>	
Recordkeeping requirements for sources using compliant coatings and/or averaging to comply with the regulation	63.806(b),(c) & (d)
Recordkeeping requirements associated with work practice standards	63.806(e)
Recordkeeping requirements for sources using control system to comply with the regulation	63.806(f)&(g)
Miscellaneous recordkeeping requirements	63.806(h),(I) & (j)
<i>Reporting Requirements</i>	
Initial notification requirements	63.807(b)
Ongoing compliance status reports	63.807(c)
Reporting requirements for sources using a control system	63.807(d)
Reporting requirements associated with the formulation assessment plan	63.807(e)

APPENDIX D.

FEDERAL REGISTER NOTICE--WOOD FURNITURE NESHAP

APPENDIX E

LIST OF VOLATILE HAZARDOUS AIR POLLUTANTS

Table E-1 includes a list of volatile hazardous air pollutants. The NESHAP emission limits are based only on the VHAP content of the coatings and adhesives, not the total HAP content. Some coatings, particularly the stains, may contain small amounts of metals that are also HAP, but the emission limit does not include these compounds. Therefore, the list presented here is only for VHAP. For a listing of all 189 hazardous air pollutants, see Section 112 of the 1990 Clean Air Act Amendments.

TABLE E-1. LIST OF VOLATILE HAZARDOUS AIR POLLUTANTS

Chemical name	CAS No.
Acetaldehyde	75070
Acetamide	60355
Acetonitrile	75058
Acetophenone	98862
2-Acetylaminofluorine	53963
Acrolein	107028
Acrylamide	79061
Acrylic acid	79107
Acrylonitrile	107131
Allyl chloride	107051
4-Aminobiphenyl	92671
Aniline	62533
o-Anisidine	90040
Benzene	71432
Benzidine	92875
Benzotrichloride	98077
Benzyl chloride	100447
Biphenyl	92524
Bis(2-ethylhexyl)phthalate (DEHP)	117817
Bis(chloromethyl)ether	542881
Bromoform	75252
1,3-Butadiene	106990
Carbon disulfide	75150

TABLE E-1. (continued)

Chemical name	CAS No.
Carbon tetrachloride	56235
Carbonyl sulfide	463581
Catechol	120809
Chloroacetic acid	79118
2-Chloroacetophenone	532274
Chlorobenzene	108907
Chloroform	67663
Chloromethyl methyl ether	107302
Chloroprene	126998
Cresols (isomers and mixture)	1319773
o-Cresol	95487
m-Cresol	108394
p-Cresol	106445
Cumene	98828
2,4-D (2,4-Dichlorophenoxyacetic acid, including salts and esters)	94757
DDE (1,1-Dichloro-2,2-bis(p-chlorophenyl)ethylene)	72559
Diazomethane	334883
Dibenzofuran	132649
1,2-Dibromo-3-chloropropane	96128
Dibutylphthalate	84742
1,4-Dichlorobenzene	106467
3,3'-Dichlorobenzidine	91941
Dichloroethyl ether (Bis(2-chloroethyl)ether)	111444
1,3-Dichloropropene	542756
Diethanolamine	111422
N,N-Dimethylaniline	121697
Diethyl sulfate	64675
3,3'-Dimethoxybenzidine	119904
4-Dimethylaminoazobenzene	60117
3,3'-Dimethylbenzidine	119937
Dimethylcarbamoyl chloride	79447

TABLE E-1. (continued)

Chemical name	CAS No.
N,N-Dimethylformamide	68122
1,1-Dimethylhydrazine	57147
Dimethyl phthalate	131113
Dimethyl sulfate	77781
4,6-Dinitro-o-cresol, and salts	
2,4-Dinitrophenol	51285
2,4-Dinitrotoluene	121142
1,4-Dioxane (1,4-Diethyleneoxide)	123911
1,2-Diphenylhydrazine	122667
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	106898
1,2-Epoxybutane	106887
Ethyl acrylate	140885
Ethylbenzene	100414
Ethyl carbamate (Urethane)	51796
Ethyl chloride (Chloroethane)	75003
Ethylene dibromide (Dibromoethane)	106934
Ethylene dichloride (1,2-Dichloroethane)	107062
Ethylene glycol	107211
Ethylene oxide	75218
Ethylenethiourea	96457
Ethylidene dichloride (1,1-Dichloroethane)	75343
Formaldehyde	50000
Glycol ethers	0
Hexachlorobenzene	118741
Hexachloro-1,3-butadiene	87683
Hexachloroethane	67721
Hexamethylene-1,6-diisocyanate	822060
Hexamethylphosphoramide	680319
Hexane	110543
Hydrazine	302012
Hydroquinone	123319

TABLE E-1. (continued)

Chemical name	CAS No.
Isophorone	78591
Maleic anhydride	108316
Methanol	67561
Methyl bromide (Bromomethane)	74839
Methyl chloride (Chloromethane)	74873
Methyl chloroform (1,1,1-Trichloroethane)	71556
Methyl ethyl ketone (2-Butanone)	78933
Methylhydrazine	60344
Methyl iodide (Iodomethane)	74884
Methyl isobutyl ketone (Hexone)	108101
Methyl isocyanate	624839
Methyl methacrylate	80626
Methyl tert-butyl ether	1634044
4,4'-Methylenebis(2-chloroaniline)	101144
Methylene chloride (Dichloromethane)	75092
4,4'-Methylenediphenyl diisocyanate (MDI)	101688
4,4'-Methylenedianiline	101779
Naphthalene	91203
Nitrobenzene	98953
4-Nitrobiphenyl	92933
4-Nitrophenol	100027
2-Nitropropane	79469
N-Nitroso-N-methylurea	684935
N-Nitrosodimethylamine	62759
N-Nitrosomorpholine	59892
Phenol	108952
p-Phenylenediamine	106503
Phosgene	75445
Phthalic anhydride	85449
Polychlorinated biphenyls (Aroclors)	1336363
Polycyclic Organic Matter ^b	0

TABLE E-1. (continued)

Chemical name	CAS No.
1,3-Propane sultone	1120714
beta-Propiolactone	57578
Propionaldehyde	123386
Propoxur (Baygon)	114261
Propylene dichloride (1,2-Dichloropropane)	78875
Propylene oxide	75569
1,2-Propylenimine (2-Methyl aziridine)	75558
Quinone	106514
Styrene	100425
Styrene oxide	96093
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746016
1,1,2,2-Tetrachloroethane	79345
Tetrachloroethylene (Perchloroethylene)	127184
Toluene	108883
2,4-Toluenediamine	95807
Toluene-2,4-diisocyanate	584849
o-Toluidine	95534
1,2,4-Trichlorobenzene	120821
1,1,2-Trichloroethane	79005
Trichloroethylene	79016
2,4,5-Trichlorophenol	95954
2,4,6-Trichlorophenol	88062
Triethylamine	121448
Trifluralin	1582098
2,2,4-Trimethylpentane	540841
Vinyl acetate	108054
Vinyl bromide	593602
Vinyl chloride	75014
Vinylidene chloride (1,1-Dichloroethylene)	75354
Xylenes (isomers and mixture)	1330207
o-Xylene	95476

TABLE E-1. (continued)

Chemical name	CAS No.
m-Xylene	108383
p-Xylene	106423

^aIncludes mono- and di-ethers of ethylene glycol, diethylene glycols and triethylene glycol; $R-(OCH_2CH_2)_nRR-OR$ where: $n = 1, 2, \text{ or } 3$; $R = \text{alkyl or aryl groups}$; $R' = R, H, \text{ or groups which, when removed, yield glycol ethers with the structure: } R-(OCH_2CH_2)_n - OH$. Polymers are excluded from the glycol category.

^bIncludes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100°C .

APPENDIX F

POLLUTANTS EXCLUDED FROM USE IN CLEANING AND WASHOFF SOLVENTS

POLLUTANTS EXCLUDED FROM USE IN CLEANING AND WASHOFF SOLVENTS

Chemical Name	CAS No.
4-Aminobiphenyl	92671
Styrene oxide	96093
Diethyl sulfate	64675
N-Nitrosomorpholine	59892
Dimethyl formamide	68122
Hexamethylphosphoramide	680319
Acetamide	60355
4,4'-Methylenedianiline	101779
o-Anisidine	90040
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746016
Beryllium salts	-
Benzidine	92875
N-Nitroso-N-methylurea	684935
Bis(chloromethyl)ether	542881
Dimethyl carbamoyl chloride	79447
Chromium compounds (hexavalent)	-
1,2-Propylenimine (2-Methyl aziridine)	75558
Arsenic and inorganic arsenic compounds	99999904
Hydrazine	302012
1,1-Dimethyl hydrazine	57147
Beryllium compounds	7440417
1,2-Dibromo-3-chloropropane	96128
N-Nitrosodimethylamine	62759
Cadmium compounds	-
Benzo (a) pyrene	50328
Polychlorinated biphenyls (Aroclors)	1336363
Heptachlor	76448
3,3'-Dimethyl benzidine	119937
Nickel subsulfide	12035722
Acrylamide	79061
Hexachlorobenzene	118741
Chlordane	57749
1,3-Propane sultone	1120714
1,3-Butadiene	106990

Chemical Name	CAS No.
Nickel refinery dust	-
2-Acetylaminoflourine	53963
3,3'-Dichlorobenzidine	53963
Lindane (hexachlorcyclohexane, gamma)	58899
2,4-Toluene diamine	95807
Dichloroethyl ether (Bis(2-chloroethyl)ether)	111444
1,2 - Diphenylhydrazine	122667
Toxaphene (chlorinated camphene)	8001352
2,4-Dinitrotoluene	121142
3,3'-Dimethoxybenzidine	119904
Formaldehyde	50000
4,4'-Methylene bis(2-chloroaniline)	101144
Acrylonitrile	107131
Ethylene dibromide(1,2-Dibromoethane)	106934
DDE (1,1-p-chlorophenyl 1-2 dichloroethylene)	72559
Chlorobenzilate	510156
Dichlorvos	62737
Vinyl chloride	75014
Coke Oven Emissions	99999908
Ethylene oxide	75218
Ethylene thiourea	96457
Vinyl bromide (bromoethene)	593602
Selenium sulfide (mono and di)	7488564
Chloroform	67663
Pentachlorophenol	87865
Ethyl carbamate (Urethane)	51796
Ethylene dichloride (1,2-Dichloroethane)	107062
Propylene dichloride (1,2-Dichloropropane)	78875
Carbon tetrachloride	56235
Benzene	71432
Methyl hydrazine	60344
Ethyl acrylate	140885
Propylene oxide	75569

Chemical Name	CAS No.
Aniline	62533
1,4-Dichlorobenzene(p)	106467
2,4,6-Trichlorophenol	88062
Bis(2-ethylhexyl)phthalate (DEHP)	117817
o-Toluidine	95534
Propoxur	114261
Trichloroethylene	79016
1,4-Dioxane (1,4-Diethyleneoxide)	123911
Acetaldehyde	75070
Bromoform	75252
Captan	133062
Epichlorohydrin	106898
Methylene chloride (Dichloromethane)	75092
Tetrachloroethylene (Perchloroethylene)	127184
Dibenz (ah) anthracene	53703
Chrysene	218019
Dimethyl aminoazobenzene	60117
Benzo (a) anthracene	56553
Benzo (b) fluoranthene	205992
Antimony trioxide	1309644
2-Nitropropane	79469
1,3-Dichloropropene	542756
7, 12-Dimethylbenz(a)anthracene	57976
Benz(c)acridine	225514
Indeno(1,2,3-cd)pyrene	193395
1,2:7,8-Dibenzopyrene	189559

APPENDIX G

SOURCES OF TECHNICAL AND REGULATORY INFORMATION

Applicability Determination Index (ADI)

(<http://134.67.104.12/cfdocs/adiwww/adiwww.html-ssi>)

The ADI is a database that contains memoranda that have been issued by the EPA on applicability associated with compliance issues. It is made available through the Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN) Bulletin Board System (BBS).

Clean Air Compliance for Wood Furniture Manufacturers

(<http://funnelweb.utcc.utk.edu/~cis/announce/wfmanual.pdf>)

This site provides a compliance document, developed by the EPA and University of Tennessee. This guide, which can be downloaded, details the issues related to compliance with the Wood Furniture Manufacturers NESHAP.

Do Your Process Materials Contain Regulated Chemicals? How to Read a Material Safety Data Sheet (MSDS) to Find Out.

<http://pprc.pnl.gov:80/pprc/sbap/wood.html>

Pacific Northwest Pollution Prevention Resource Center (PPRC)

1326 Fifth Ave., Suite 650

Seattle, WA 98101

The PPRC is a nonprofit organization that supports projects that result in pollution prevention, toxic use elimination and reduction. PPRC Website offers regulatory fact sheets, pollution prevention opportunities, and compliance guidance.

Emission Estimation Worksheet

<http://pprc.pnl.gov:80/pprc/sbap/wood.html>

Pacific Northwest Pollution Prevention Resource Center (PPRC)

1326 Fifth Ave., Suite 650

Seattle, WA 98101

PPRC provides a worksheet to assist in calculating mass-balances and annual emissions.

Enviro\$en\$e (<http://es.inel.gov>)

Enviro\$en\$e is a large repository of information dealing with: pollution prevention, compliance assurance, enforcement information, and databases.

Facts About Wood Furniture Manufacturing Operations MACT

Wisconsin Department of Natural Resources (DNR)

Bureau of Air Management

P.O. Box 7921

101 South Webster Street

Madison, Wisconsin 53707-7921

Phone: (608) 267-6897

This fact sheet, developed by Wisconsin DNR's Small Business Clean Air Assistance Program, summarizes the emission, work practice, and recordkeeping requirements of the NESHAP.

Fact Sheet: NESHAP for Wood Furniture Manufacturing Operations

<http://www.deq.state.la.us/oarp/sbap/forms.htm>

Louisiana Department of Environmental Quality (LA DEQ)

Office of Air Quality and Radiation Protection

P.O. Box 82135

Baton Rouge, LA 70884-2135

Phone: (504) 765-0219

This fact sheet, developed LA DEQ, summarizes the emission, work practice, and recordkeeping requirements of the NESHAP.

Fact Sheet for Wood Furniture NESHAP

South Coast Air Quality Management District (SCAQMD)

21865 East Copley Drive

Diamond Bar, CA 91765-4182

Phone: (909) 396-2000

This fact sheet, developed SCAQMD, summarizes the emission, work practice, and recordkeeping requirements of the NESHAP.

Furniture/Wood Manufacturing and Refinishing, U.S. EPA, RCRA Fact Sheet. (EPA/530-SW-90-027c) This document is an overview of the wood furniture manufacturing industry and the hazardous waste it produces.

New York Department of Environmental Conservation

Division of Air Resources

50 Wolf Road

Albany, NY 12233-3250

Phone: (518) 457-7230

NY DEC is planning to publish a wood furniture NESHAP guidance document in 1998. The document will include regulatory summaries, compliance checklists, and commonly asked questions.

North Carolina Department of Environment, Health, and Natural Resources (NC DEHNR)

Division of Air Quality

P.O. Box 29580

Raleigh, NC 27626-0580

Phone: (919) 715-6232

NC DEHNR Division of Pollution Prevention and Environmental Assistance offers a web page <http://www.owr.ehnr.state.nc.us/ref/00017.htm> that provides information on regulatory incentives, emission reduction, and pollution prevention opportunities. The Division of Air Quality is also developing a wood furniture NESHAP fact sheet.

Pollution Prevention Options in Wood Furniture Manufacturing, A Bibliographic Report,
U.S. EPA, Office of Pollution Prevention and Toxics, February 1992. (EPA/560/8-92/001C)

Wood Furniture Manufacturing Industry Compliance and Pollution Prevention Workbook
<http://pprc.pnl.gov:80/pprc/sbap/wood.html>

Pacific Northwest Pollution Prevention Resource Center (PPRC)
1326 Fifth Ave., Suite 650
Seattle, WA 98101

The workbook is scheduled to be completed in the spring of 1997 and will contain information on waste inventories, emission estimation, and pollution prevention opportunities.

Wood Furniture: The Clean Air Act and Pollution Prevention Opportunities

Northeast Waste Management Official Association (NEWMOA)
129 Portland Street
Boston, MA 02114
(617) 367-8558

This guidance document, developed by NEWMOA and the Northeast States for Coordinating Air Use Management, focuses on pollution prevention guidance, but also contains an overview of the CTG and NESHAP requirements.

Wood Furniture and Fixtures Industry Sector Notebook

(<http://es.inel.gov/comply/sector/index.html#wood>)

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
Telephone orders: (202) 512-1800

The notebook provides a overview of the industries classified as 25 in the SIC code and includes: a comprehensive environmental profile; industrial process information; pollution prevention techniques; pollutant release data; regulatory requirements; compliance/enforcement history; innovative programs; and contact names.

Wood Furniture MACT Implementation Strategy

Illinois Environmental Protection Agency (IEPA)
Bureau of Air
2200 Churchill Road
P.O. Box 19276
Springfield, IL 62794-9276
Phone: (217) 785-4140

IEPA is in the process of developing a wood furniture implementation document that will contain applicability flowcharts, compliance schedule, and compliance assurance. As of yet there is no set publication date.

Wood Furniture Manufacturing Fact Sheet

Virginia Department of Environmental Quality

Office of Small Business Assistance

629 East Main Street

Richmond, Virginia 23219

Phone: (804) 698-4394

This fact sheet summarizes the requirements of the NESHAP and is available at *<http://www.deq.state.va.us/osba/smallbiz.html>* on the world wide web or contact Richard Rasmussen, Director of Small Business Assistance.

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